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A CRITICAL CONSIDERATION OF THE TREATMENT OF THE MALARIAS.

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Consideration of the treatment of the malarias will of necessity under present conditions deal first with the alkaloidal derivatives of cinchona bark, particularly with quinine.

The Alkaloids of Cinchona Bark.

Roughly speaking, an acid infusion of the bark from a given species and strain of cinchona, containing the alkaloids, will in the process of manufacture be treated in one of two ways. If the bark's quinine content be not sufficiently great to permit economically of the commercial extraction of this alkaloid, the whole of the alkaloids will be precipitated therefrom by caustic soda and will be sold as *cinchona febrifuge*. According to MACGILCHRIST (1915 *a*) every batch of bark varies in alkaloidal content and cinchona febrifuge has no fixed chemical composition. PRAIN (1924), however, reports that the proportion of quinine to the other alkaloids of cinchona in the bark of a particular species grown in any locality where the conditions permit of its cultivation is remarkably constant.

If, however, the bark's quinine content be high, the sulphate is separated from the acid infusion by special means. After extraction of quinine the infusion may again be treated in one of two ways. Either the whole of the *residual alkaloids* may be precipitated by caustic soda and used for treatment under that name ; or there may be extracted, one by one, first the crystalline alkaloids by precipitation (cinchonidine as a tartrate, quinidine as an acid tartrate, and chinchonine by virtue of its insolubility in 80 per cent. alcohol), then the non-crystalline as a brittle or treacly mass thrown down by the evaporation of the spirit in which they have been dissolved and known as *quinoidine* or *amorphous alkaloid*.

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The average analysis of Indian and Sumatran cinchona febrifuge and of Indian residual alkaloid are given as follows (MacGilchrist, 1915 *a* ; Fletcher, 1923) :—

	Cinchona febrifuge.		Residual alkaloid.
	Indian. per cent.	Javan. per cent.	Indian. per cent.
Quinine	7·4	11·5	3
Cinchonine	18·58	26·3	35
Quinidine	22·83	5	20
Cinchonidine	5·84	20	2
Quinoidine	29·12	37·2	30
Water and ash	16·23		10

Quinine.

Confident recommendations of the most successful methods for the treatment of the malarias by quinine, in varying doses of the alkaloid or of its many salts, at varying intervals and hours, are conspicuous in the pages of this *Bulletin.* Their number induces scepticism. In attempts to determine the best method of quinine administration several procedures have been or may be followed

1. The means by which quinine exercises its beneficent effects have been investigated. Knowledge of these would enable it to be used to the best advantage.

Quinine, however administered, enters the blood. Ramsden, Lipkin & Whitley (1918) found that after administration of quinine serum contains 2 or 3 times as much of it as do erythrocytes. Morgenroth (1918) and Schilling & Boecker (1919) found that when quinine was added to defibrinated blood the red cells contained more quinine than the serum. The conditions are different and the observations not necessarily contradictory. Returning to the work of Ramsden, Lipkin & Whitley, within 3 minutes of injecting quinine direct into the rabbit's circulation 90 per cent. has disappeared thence. It, however, reappears :—(1) stored—slightly in lymph glands, considerably in bone marrow, and highly in kidneys, spleen and adrenals. After the intraperitoneal injection the last contains at least 700 times as much, weight for weight, as does blood. Quinine so stored is destroyed or " metabolized " by the tissues. Tested by incubating these with known quantities of quinine, its metabolism is greatest in liver, intestinal wall, muscles and kidneys. Since quinine contains merely the same elements as do hundreds of other organic bodies its metabolites can be identified only by their constitution, not by their atomic constituents ; and their constitution, identity and reactions are unknown. Metabolized quinine disappears in the body without trace in our present knowledge. (2) Quinine is expelled from the body, not at all in the faeces, unless there be diarrhoea, to a variable extent in the urine. Hartmann & Zila (1918) hold the percentage so excreted to vary from 15 to 35—more generally it is placed between 23 and 65 ; when 90 gr. were administered daily for 2 days it lay between 7 and 11 (Ramsden, Lipkin & Whitley, 1918).

Quinine undergoes, then, after absorption, one of two fates. Part is ejected unchanged from the body by the kidneys, the rest, varying from 35 to 93 per cent., is broken up into unknown bodies. To which moiety is the beneficent action of quinine due ? In either case is the action direct or indirect ? The literature speaks uncertainly. On the one hand lie such conclusions as these :—" During that minute, however [before 90 per cent. of quinine leaves the circulation], the physician

knows that the quinine is present in the circulation in maximal concentration, and that its full destructive effect is being exerted upon such parasites as have not reached the ' safe area ' within the erythrocytes." On the other hand are these facts. Bass (1922) finds that in the cultivation in vitro of schizogonic forms of *P. falciparum* a 1 in 4,000 solution of quinine causes evident degeneration of intra-corpuscular forms within 5 hours, this quantity being equivalent to 2 grammes in the whole blood of a man of 150 lb. But, as has been noted, the rapid disappearance of quinine from the blood seems to exclude the possibility that such a concentration should ever occur there at all, certainly that it should persist for five hours. Morgenroth (1918), indeed, estimates the quinine content of blood as only 1 in 20,000 a few minutes after intravenous injection and 1 in 150,000 to 1 in 500,000 after oral administration. Kirschbaum (1923) found citrated blood containing *P. vivax* to be still infective after incubation at blood temperature for 5 to 24 hours with an equal quantity of a 1 in 5,000 solution of quinine. In eleven cases of the great Liverpool series (see below) the quinine content of the blood was estimated. In those 3 in which it was highest and quinism greatest *P. vivax* persisted longest in the peripheral blood. In one of the 3 (taking 5 gr. of quinine 3 times a day, 6 days a week for 3 weeks) the parasites never left the cutaneous circulation at all. In another Ramsden, Lipkin & Whitley (*l.c.*) found the maximum strength of quinine to be 1 in 100,000, 27 hours after administration, in a case in which parasites persisted longer than in most cases.

The evidence suggests, then, that quinine is not specifically poisonous to plasmodia, but that it acts by producing, directly or indirectly, bodies which are. If, however, quinine act through metabolites, then, granted equal dosage and absorption, that individual in whom a large percentage of the drug is excreted unchanged in the urine is using it unsatisfactorily. We have, however, no evidence that quinine is ever completely unabsorbed or completely metabolized. Accordingly its absence from the urine may still reasonably be accepted as proof that none has been taken, but the quantity recovered does not indicate the quantity received. Warrington Yorke & Macfie (1924) suggest as the most reasonable explanation of facts that quinine directly or indirectly destroys a percentage only of plasmodia, that this dissolution induces, through the freeing of antigen, the formation of immune body, and that the last, not quinine, destroys the remainder of the parasites and disinfests the host—provided the body has adequately reacted. Such considerations indicate that the mode of action of quinine is too imperfectly known to afford guidance as to its best method of administration.

2. Investigation of quinine resistance.—If quinine fail to cure malaria, and if the conditions under which such failure occurs could be discovered, the principles underlying effective treatment might well be established. Fletcher (1923 *a*) has indefatigably and critically investigated reputed quinine-fastness in hundreds of persons. In one only have malaria parasites persisted in the blood after he satisfied himself personally that the quinine ordered had been swallowed. Bass (1923), too, fails to find substantiation for claims that quinine resistance exists; and Ravaut and collaborators (1917) have disproved its existence in many cases in which it had been accepted. Similarly, Warrington Yorke & Macfie (1924) find that when quinine ordered orally has failed to eradicate parasites from the cutaneous blood intramuscular injection has invariably produced this

result. There has been no quinine resistance. The drug has not been absorbed, possibly not swallowed. The investigation of quinine resistance has but attested the efficacy of quinine in ridding the blood of malaria parasites. It has thrown no light on its curative mechanism.

3. By comparing the percentage of recovery when quinine is administered in different ways attempts have been made to discover the best line of treatment. Owing to the impossibility of determining whether disinfestation has been attained, such " cure " has commonly implied freedom from clinical and parasitic relapse after treatment has ceased over a test period of arbitrarily chosen length. Owing to the significant but commonly overlooked conclusions independently reached by both, two only of the many recorded sets of experiments need here be considered—the Liverpool cases (STEPHENS *et al.*, 1918) and the Macedonian cases (ANDERSON, 1922).

In the Liverpool series hundreds of men were submitted between February, 1917, and May, 1918, to a number of different treatments. The test period was 8 weeks. Of the various treatments, one, 90 gr. of quinine sulphate daily in solution on each of two consecutive days, was repeated at a different season. Of 76 cases treated by it from July to September, 29, or 38 per cent., relapsed, while of 89 treated between January and April, 83, or 93 per cent., relapsed.

The Macedonian experiment was carried out under conditions of locality and control which also reasonably excluded reinfection. Using the same sets of quinine treatments on 199 cases, 92 admitted before July 1st and 107 from that date onwards, the percentages of relapse for each treatment were respectively 72, 71·4, 68·1 and 70·8 for the first period and 28·5, 35·1, 36·3 and 17·6 for the second. Of 17 controls 76·4 per cent. relapsed in the earlier period and of 27 controls 62·9 per cent. in the later. Similarly massing together the Liverpool experiments the percentages of relapse for the four quarters of the year were 96·7, 78·3, 36·5 and 64·8. The Liverpool workers did not conclude that " nice warm weather is a better cure for malaria than quinine," but held that on the evidence season has a great influence on the efficacy of quinine treatment of malaria in the class of case concerned (an influence difficult to dispute after the Macedonian confirmation), and that it is at least clear that to attempt to determine the value of a line of treatment merely by noting the number of relapses which follow it within a particular time is useless. This conclusion renders meaningless most of the vast mass of work upon which the relative values of various quinine treatments are estimated. A seasonal efficacy of treatment correlating itself with the recognized seasonal tendency to relapse is not unreasonable.

4. The stage of infection—clinical or pathological, not biological—at which quinine treatment is instituted requires notice. It has been urged by GÉNÉVRIER (1921) that malaria, like syphilis, has three stages: (i) before gametes appear, lasting 10–12 days; (ii) the intermediate condition; (iii) after visceral lesions establish themselves. The reasonableness of such division is combated by Ed. SERGENT (1921). Experience on the continent of the treatment of benign tertian malaria, deliberately induced by injection for the amelioration of general paralysis, shows that these first attacks are almost invariably cured with 5 gm. (75 gr.) of quinine sulphate. Warrington YORKE & MACFIE (1924) have confirmed these findings in a considerable series of cases—mosquito-carried as well as injected—closely followed up. They used 6 gm. in all, namely 30 grains on three consecutive days, with a relapse percentage of 1·6 in injected and 13 in mosquito cases. Moreover, a

number of paralytics have died at various periods after treatment of induced malaria. In none has close search of the organs detected plasmodia. SEGUIN'S experience of ordinarily acquired malaria convinces him (1921, 1922) that recent infections are essentially curable. Such experiences, in their marked contrast to those of Macedonia and East Africa in war time, indicate another factor of a vital nature and yet one generally, perhaps completely, disregarded in comparative statistics.

5. The best route, time, medium and interval of administration and the best salt have been canvassed. By reason of the millions of persons involved the *oral route* must ordinarily be employed. Its efficacy is amply evidenced, *e.g.*, by COLLETT (1920), but the immense majority of cases are of course not published. One reason of its apparent failure FLETCHER'S work has, as noted, indicated. It has been suggested that its administration in tablet form is another. It has, however, been shown that properly made tablets of quinine hydrochloride produce at least as much urinary excretion of the base as does the same quantity in solution (SEIDELIN, 1922). There has been a tendency to blame sugar coating as preventing absorption (LANGERON, 1922), but sugar cannot but rapidly dissolve in any aqueous fluid. The fault really lies in the tablet's menstruum, which, as BLANCHARD has shown (1922), may resist solubility for months and defy the attack of a hammer. It is as useless to expect absorption by solution of the quinine which lies in the centre of an impervious lump of concrete as it is unreasonable to condemn the popular, sugar coated, rapidly disintegrating tablets of proved efficacy, and yet the quality of the menstruum is rarely considered in the reports of these cases ; a state of things which perhaps prompts the generally recognized advantage of solution over quinine in tablet form. MUNK (1917), MARIANI (1904), and GIEMSA & SCHAUMANN (1907) conclude from urine analysis that the less soluble salts of quinine are absorbed from the gastro-intestinal canal at least as energetically as the more soluble. MACGILCHRIST (1911), finding the maximum elimination of quinine taken fasting to be 3 to 6 hours, and taken with food 6 to 12 hours, and correlating this with a maximum gastric retention of food for 5 hours after administration, concludes that absorption is mainly from the small intestine, and that quinine, as whatever salt given, has, before absorption, been necessarily precipitated as the alkaloid by the alkaline intestinal juices. Intestinal solution and absorption, one presumes, would accordingly depend on the fineness of the resulting precipitate. On the relation of food to quinine absorption ROSS writes (1910, p. 136) : " I have observed in experiments on myself that quinine taken just before a meal causes *tinnitus aurium* in about half-an-hour, this proving its rapid absorption ; but taken after a meal it does not produce this effect so quickly."

There is a widely held inference (*cf.* HAY-MICHEL, 1918 ; MICHAEL, 1920 ; MCCARRISON & CORNWALL, 1919) that quinine is only effective during sporulation, that is to say, against extra-corpuscular stages, among which sporozoits, too, are apparently to be included, CARDAMATIS (1918) urging that quinine should be begun 7 or 8 hours before the paroxysm is due. Evidence has not been traced in its support. On the contrary, RIEUX (1918) observes that if quinine administration be started when schizonts are very young, growth ceases and degeneration begins. If started when these are half grown, some are killed and degenerate and some carry on to sporulation. If begun during sporulation this is not checked. In gametes change is

less rapid but degeneration follows in time. Possibly the inference mentioned is an illegitimate offspring of the belief that quinine is not absorbed by erythrocytes. As noted, Bass finds that quinine in a concentration of 1 in 4,000 produces degeneration of intracorpuscular forms. The giving of quinine at a special phase of the life cycle does not appear, then, to be based on scientific observations.

For *intramuscular injection* of quinine the small bulk of fluid available renders necessary the use of a soluble salt, the bihydrochloride being commonly used. The true value of this route remains undetermined. In MacGilchrist's experiments with bihydrochloride (1911) necrosis followed intramuscular injection into guineapigs so rapidly as to exclude even thrombosis as its cause. It was widespread in dilutions as weak as 1 in 150 and quinine was precipitated in and recovered from the necrotic tissues. The experiments of Dudgeon (1919) leave no doubt on this matter, and Hele (1922) reports the same finding. Mariani, too (*l.c.*), found 60 per cent. of quinine bihydrochloride in rabbits' muscle 17 hours after its injection. Clinically, too, the sequelae of intramuscular injection can be grave or catastrophic. Apart from the reappearance in the literature of deaths from tetanus (Borel & Maire, 1923), sterile injections may be followed by wide necrosis of muscle, nerve and artery (Ross, 1914; Fletcher & Visuvalingam, 1922–23; Acton & Knowles, 1924; Bassett-Smith, 1923; and many others), and may be so painful that further experiences in that direction are refused.

On the other hand, Lipkin (1919), using apparently the bihydrochloride, found that no unusual appearances were exhibited at the site of injection, and that quinine seemingly rapidly disappeared thence. With his finding is presumably to be correlated the widely expressed experience (Clarke, 1914; Clarenc, 1913; Fox, 1917; Simpson-Wells, 1917) that when oral quinine fails an intramuscular injection may result in disappearance of parasites from the cutaneous blood, after attaining which oral quinine may beneficially be resumed. McLay (1922) has compared films taken after giving 60 grains of quinine bihydrochloride (a) by mouth, (b) intramuscularly or subcutaneously, and found that they became negative earlier with oral administration. The conditions under which intramuscularly injected quinine will produce widespread necrosis, with its terrible sequelae and without rapid absorption as distinguished from those under which the reverse seemingly holds are not determinable on existing data. Mathieu (1922) points out that these grave potentialities for harm inherent in intramuscular injection preclude in fairness the delegation of these injections to subordinates, while the uncertainties regarding absorption exclude this route where rapid effect is essential.

There is no evidence that disinfestation is more readily obtained with intravenous than with oral quinine, but where rapid access of quinine to the blood stream is imperative, as in coma or the antecedent hyperparasitism, *intravenous medication* is very strongly advocated (Griffin, 1917; Willcox, 1920; and many others). Brahmachari (1922), to avoid the fall in blood pressure which has accompanied some of his injections, dilutes ten grains of quinine, presumably bihydrochloride, with not more than 200 cc. of normal saline, administration occupying 20 minutes. Others merely advocate slow injection, which seems to attain the same object so far as dilution in the circulation goes, although any leakage beside the vein will be of concentrated solution with its attendant risk of necrosis. If intravenous injection can be accomplished with tartar emetic for kala azar by Indian subassistant surgeons

at the rate of 3 or 4 cases a minute (McCombie Young, 1924), a medical man with European training has little justification for its disregard with quinine in malaria at his leisure, on the ground that it is a skilled operation.

While the risk of local damage by *rectal quinine* is such, in Fletcher's experience (1923 *b*), as to preclude its use, Newham (1923) and de Freitas (1923) reaffirm its value and certainty in overcoming acute malaria.

6. Another variable constantly overlooked lies in the species of parasite concerned. For quartan malaria quinine has been reported as giving unsatisfactory disinfestation (*e.g.*, Leslie, 1923). In MacGilchrist's "minimum therapeutic dosage" experiments (1915 *b*) he found that to remove asexual parasites from the peripheral blood there was required for benign tertian malaria 0·1 gm. of quinine per 70 kilo body weight, the dosage for malignant tertian malaria being 0·15 and for quartan malaria 0·2 gm. The cases were few. No evidence seems to exist that the minimum therapeutic dose and the disinfestant value run parallel. As already noted (see this *Bulletin*, Vol. 20, p. 777) Wenyon (1921), Mayne (1920), and Walch & Walch-Sorgdrager (1921) have produced evidence that quinine is more potent against the schizonts of *P. falciparum* than of *P. vivax*, whereas for the gametocytes the condition is reversed; Muehlens & Kirschbaum, too (1921), have infected *A. maculipennis* with blood containing crescents, the donor being quininized. Evidence then accumulates that not merely biologically and symptomatically but therapeutically there are three malarias, and that the last aspect requires wider realization and investigation than it has hitherto received in estimating the therapeutic value of quinine.

Conclusions.—It does not seem possible, from these considerations, to avoid inferring that by reason of our ignorance regarding the intracorporeal reactions of quinine, of loose talk concerning quinine resistance, of the discovery that in all likelihood season affects the therapeutic efficacy of quinine, of lack of knowledge of the factors making for ready absorption of quinine from alimentary canal or muscle, and of failure to take into consideration that the action of quinine differs in early and late cases, in the different stages of development, and in the different species of plasmodium, our knowledge forms no scientific basis for determining the best line of treatment with this valuable drug, and, indeed, gives no indication as to whether such special modifications of administration as have been strongly advocated really serve any useful purpose.

A few lines of treatment are, however, at present favoured :—

(1). The Standard Treatment of the United States National Malaria Commission specially advocated by Bass (1921). Thirty grains (2 gm.) daily of quinine sulphate so long as clinical symptoms continue, or for 3 or 4 days, in 3 doses of 10 grains each, and thereafter 10 grains daily for 8 weeks, this course being held to disinfect 90 per cent. of cases.

(2). Nocht's Treatment.—1 gramme daily of the bisulphate in powder in fractional doses of 0·2 gramme two-hourly from 6 a.m. to 2 p.m., for ten days continuously, and thereafter, with certain intervals, for two months.

(3). Ross's Treatment.—A ten weeks' course entailing administration of 15 grains of quinine sulphate or hydrochloride daily for 2 weeks and thereafter 10 grains daily on 6 days a week for 8 weeks—a total of 690 grains.

The common feature of all these treatments is the prolongation of the course. ACTON and collaborators (1921) have shown that in relapses of benign tertian malaria a given quinine treatment—those tested ranged from 300 to 1,980 grains—will cure a definite percentage of cases, and its repetition will cure the same percentage of the relapsing, 8 weeks being taken as the test for cure. ROSS (1921) points out that a similar fractional curative effect follows each dose—the Single Dose Reduction Rate.

No evidence has been traced in favour of the widely expressed inference that provocatives which cause reappearance of plasmodia in the cutaneous circulation aid in any way the action of quinine.

Cinchona Alkaloids other than Quinine.

There is considerable evidence that the general disregard of cinchona alkaloids other than quinine is therapeutically unjustified and economically unfortunate. MACGILCHRIST (1915, *b*), working in Calcutta from September to December, determined on 113 prisoners the weight in grammes of the various alkaloids required to produce a negative blood examination, presumably in a thin film. Dosage was at the rate of 1 gramme per 70 kilos. body weight at each of 3 doses daily, a blood film being taken at the time of every dose. For quinine, cinchonine, quinidine and conchonidine the respective average figures were for benign tertian malaria 4·7, 5.5, 5, and 5·6 grammes, and for sub-tertian malaria 6·1, 5·6, 4·85 and 4·3 grammes. In this series quinine acted most rapidly upon *Plasmodium vivax*, cinchonidine upon *P. falciparum*. It would not necessarily follow that their capacity for complete disinfestation would lie in the same order. Judging by the minimum therapeutic dose (see p. 855), the relative curative values for the cinchona derivatives were, without distinction of the two parasites, first hydroquinine hydrochloride, next, and of practically equal value, the sulphates of cinchonine, quinine and quinidine, then, in order, optochin hydrochloride (ethyl-hydro-cuprein), cinchonidine sulphate, and, lastly, quinoidine. ACTON holds (1920) that the laevo-rotatory quinine and hydroquinine are specific for *P. falciparum*, whilst the dextro-rotatory quinidine acts more powerfully on *P. vivax*. He puts the cure rate of the cinchona alkaloids for *P. vivax* as—quinine 20 per cent., cinchonine 40 per cent., cinchona febrifuge 50 per cent., cinchonidine and quinidine 60 per cent., and quinoidine 0. ROGERS (1918) finds that in rabbits cinchonine is absorbed after intramuscular injection more completely than is quinine ; and that in man its use is less painful and causes more rapid disappearance of plasmodia than does quinine. BINI (1921) advocates cinchonine, SILVESTRI (1923) reports a few experiments in which cinchonine bihydrochloride injected intramuscularly gave less local precipitation and greater visceral accumulation of the drug than did the corresponding quinine salt, while in oral administration more of the former was excreted by the urine than of the latter. CORDES (1924) finds cinchonine less satisfactory for subtertian malaria than quinine. Quinoidine, in opposition to the conclusions of ACTON (see above), in daily doses of 6 grains (WATERS, 1916), 9 to 18 gr. (TELANG, 1916), 12 gr. (RAZZAK, 1917), is recommended as equal in action to quinine. ROW (1919) found quinoidine incapable of eradicating the parasites or preventing relapses. The contradictory evidence suggests that quinoidine varies in composition and that some of the amorphous alkaloids are valuable, others worthless.

It is of no little economic importance that further investigation, taking cognizance of the sources of error above mentioned, should put the relative value of the cinchona alkaloids on a satisfactory footing.

Other Lines of Treatment.

Neosalvarsan, so far from being curative in subtertian malaria, has been in a number of cases the cause of death, lighting up a malaria latent and recognized too late. On benign tertian malaria its immediate effect in suppressing parasites is generally marked, yet relapse has constantly been reported. Mercury and tartar emetic have failed. Splenectomy does not disinfest—may indeed induce immediate and fatal relapse (DEGORCE, 1913). X rays, used under certain precise conditions (PAIS, 1923), are still advocated as curative. The good results reported with infusion of *Vitex peduncularis* by VAUGHAN (1921) have not been obtained by CHOPRA, KNOWLES & GUPTA (1924). The harmala alkaloids (GUNN & MARSHALL, 1919–20) have proved valueless.

In spite of their imperfections—perhaps the result of our ignorance of their proper use—quinine and its allies remain invaluable and unsurpassed in the treatment of the malarias.

REFERENCES.

ACTON (H. W.). (1920.) Researches on the Treatment of Benign Tertian Fever. —*Lancet.* June 12. 1257–1261.

—— & KNOWLES (R.). (1924.) On a Standard Treatment for Malaria.— *Indian Med. Gaz.* lix. 177–184.

——, RENNIE (P. M.), CURJEL (D. F.) & DEWEY (J. O.). (1921.) The Diagnosis and Treatment of Benign Tertian and Malignant Tertian Fevers.— *Indian Jl. Med. Res.* viii. 750–871.

ANDERSON (A. G.). (1922.) Malaria in Macedonia, 1915–1919. Part II. Clinical Observations on the Treatment of Malaria in Macedonia.— *Jl. Roy. Army Med. Corps.* xxxviii. 25–40.

BASS (C. C.). (1921.) The Standard Treatment for Malaria. A Discussion of Some of its Advantages.—*Southern Med. Jl.* xiv. 280–288.

——. (1922.) Some Observations on the Effect of Quinine upon the Growth of Malaria Plasmodia in vitro.— *Amer. Jl. Trop. Med.* ii. 289–291.

——. (1923.) The Standard Treatment for Malaria.— *New York Med. Jl. & Med. Rec.* June 20. 740.

BASSETT-SMITH (P.). (1923.) Naval Medical History of the War. Section of Tropical and Sub-Tropical Medicine. Part I. (i) Malaria and Blackwater Fever.— *Jl. Roy. Nav. Med. Serv.* ix. 126–136.

BINI (G.). (1921.) La cinconina può sostituire la chinina.—*Policlinico.* Sez. Prat. xxviii. 919.

BLANCHARD (M.). (1922.) Les insuccès de la quinine préventive dus à l'insolubilité des comprimés.— *Bull. Soc. Path. Exot.* xv. 293–295.

BOREL (P.) & MAIRE (G. L. E.). (1923.) Étude sur le paludisme dans les territoires de la 2e division de l'armée française du Levant.— *Arch. Méd. et Pharm. Milit.* lxxix. 729–752.

BRAHMACHARI (U. N.). (1922.) Dangers of Rapid Intravenous Injection of Concentrated Solutions of Quinine Bihydrochlor.— *Jl. Trop. Med. & Hyg.* xxv. 209–211.

CARDAMATIS (J. P.). (1918.) Mode d'action de la quinine sur les diverses formes d'hématozoaires ; traitement prophylactique et curatif le plus efficace du paludisme.— *Bull. Soc. Path. Exot.* xi. 648–662.

CHOPRA (R. N.), KNOWLES (R. H.) & GUPTA (J. C.). (1924.) On the Failure of *Vitex peduncularis* in the Treatment of Malaria.— *Indian Med. Gaz.* lix. 133–135.

CLARENC (H.). (1913.) Les méthodes d'administration de la quinine.—*Bull. Soc. Méd. de l'Ile Maurice.* ser. 2. xxxi. 51–52.

CLARKE (J. T.). (1914.) Intramuscular Injections of Quinine. [Correspondence.]— *Jl. Trop. Med. & Hyg.* xvii. 272.

COLLETT (J. W.). (1920.) Treatment of Malaria. [Correspondence.]—*Brit. Med. Jl.* Feb. 21. 273.

CORDES (W.). (1924.) Ueber den therapeutischen Wert des Cinchonins bei Malaria tropica.— *Arch. f. Schiffs- u. Trop.-Hyg.* xxviii. 120–123.

Degorce (A.). (1913.) Accès palustres mortels ou tenaces observés après la splénectomie.—*Bull. Soc. Med.-Chirurg. de l'Indochine.* iv. 299–306.

Dudgeon (L. S.). (1919.) On the Effects of Injection of Quinine into the Tissues of Man and Animals.—*Jl. Hygiene.* xviii. 317–336.

Fletcher (W.). (1923*a*.) Notes on the Treatment of Malaria with the Alkaloids of Cinchona.—*Studies from the Inst. for Med. Res. Kuala Lumpur, Federated Malay States.* No. 18. viii.+92.

——. (1923*b*.) Rectal Injections of Quinine.—*Jl. Trop. Med. & Hyg.* xxvi. 229–230.

—— & Visuvalingham (S. A.). (1922–23.) Intramuscular Injections of Quinine —*Trans. Malaya Branch Brit. Med. Assoc.* 10–22.

Fox (S. C. G.). (1917.) Intramuscular Injections of Quinine Bihydrochloride in Simple Tertian Malaria. [Correspondence.]—*Lancet.* Dec. 15. 909–910.

de Freitas (Q. B.). (1923.) Quinine per Rectum in the Child. [Correspondence.]—*Jl. Trop. Med. & Hyg.* xxvi. 348.

Génévrier (J.). (1921.) Prophylaxie du paludisme en milieu militaire. De la stérilisation du paludisme par les injections intraveineuses de quinine.—*Bull. Soc. Méd. Milit. Fr.* xv. 137–145.

Giemsa (G.) & Schaumann (H.). (1907.) Pharmakologische und chemisch-physiologische Studien über Chinin.—*Beiheft. z. Arch. f. Schiffs- u. Trop.-Hyg.* xi. Beiheft 3. 1–84.

Griffin (W. B.). (1917.) Treatment of Malaria by Intravenous Injections of Quinine Urethane.—*St. Bart. Hosp. Jl.* xxiv. 87–88.

Gunn (J. A.) & Marshall (D. G.). (1919–20.) The Harmala Alkaloids in Malaria.—Reprinted from *Proc. Roy. Soc. of Edinburgh.* xl. 140–149.

Hartmann (H.) & Zila (L.). (1918.) Das Schicksal des Chinins in Organismus. —*Arch. f. Experim. Path. u. Pharmakol.* lxxxiii, 221–234.

Hay-Michel (A.). (1918.) The Treatment of Malaria by Intravenous Injection of Organic Arsenical Compounds.—*S. African Med. Rec.* xvi. 275–279.

Hele (T. S.). (1922.) Malaria in Macedonia, 1915–1919. Part IV. Chemical Investigations on the Excretion of Quinine by Soldiers in Macedonia.—*Jl. Roy. Army Med. Corps.* xxxviii. 251–266.

Kirschbaum (W.). (1923.) Methoden und Kautelen einer Malaria-Blut-Konservierung und-Versendung zur Behandlung der progressiven Paralyse nach Beobachtungen an Tertiana-Plasmodien in Vitro und an Impfversuchen. —*Klin. Woch.* ii. 1404–1406.

Langeron (M.). (1922.) A propos des comprimés de sels de quinine.—*Bull. Soc. Path. Exot.* xv. 959–961.

Leslie (P. C.). (1923.) Quartan Malaria. Case Report.—*Canadian Med. Assoc. Jl.* xiii. 752–753.

Lipkin (I. J.). (1919.) On the Distribution and Destruction of Quinine in Animal Tissues.—*Ann. Trop. Med. & Parasit.* xix. 149–176.

McCarrison (R.) & Cornwall (J. W.). (1919.) Pharmaco-Dynamics of Quinine.—*Indian Jl. Med. Res.* vi. 248–261.

MacGilchrist (A. C.). (1911.) Quinine and its Salts: their Solubility and Absorbability.—*Scientific Memoirs by Officers of the Medical and Sanitary Department of the Government of India.* New Series. No. 41. 1–46.

——. (1915 *a*.) Quinoidine: Its Characters, Composition and Lethality to Protozoa. (Cinchona Derivatives Inquiry.) Fourth Communication.—*Indian Jl. Med. Res.* ii. 888–906.

——. (1915 *b*.) The Relative Therapeutic Value in Malaria of the Cinchona Alkaloids—Quinine, Cinchonine, Quinidine, Cinchonidine and Quinoidine, and the Two Derivatives—Hydro-Quinine and Ethyl-Hydro-Cupreine. (Cinchona Derivatives Inquiry. Fifth Communication.)—*Indian Jl. Med. Res.* iii. 1–89.

McLay (K.). (1922.) Malaria in Macedonia, 1915–1919. Part III. Haematological Investigations on Malaria in Macedonia.—*Jl. Roy. Army Med. Corps.* xxxviii. 93–105.

Mariani (F.). (1904.) L'assorbimento e l'eliminazione della chinina a de' suoi sali; deduzioni per la terapia e la profilassi dell' infezione malarica.—*Atti d. Soc. p. g. studi d. Malaria.* 211–258.

Mathieu. (1922.) Note sur le traitement du paludisme par la quinine.—*Arch. Méd. et Pharm. Nav.* cxii. 97–111.

Mayne (B.). (1920.) Can the Mosquito convey Infection from a Malaria Patient undergoing Treatment? Does Sporogony affect Mosquito Life?—*Public Health Rep.* xxxv. 1664–1669.

Michael (W. H.). (1920.) Satisfactory Treatment of Malaria.—*U.S. Naval Med. Bull.* xiv. 367–370.

Morgenroth (J.). (1918.) Die Therapie der Malaria durch Chinaalkaloide und ihre theoretischen Grundlagen.—*Deut. Med. Woch.* xliv. 961–965; 988–992.

Muehlens (P.) & Kirschbaum (W.). (1921.) Parasitologische und klinische Beobachtungen bei kunstlichen Malaria- und Recurrensübertragungen. — *Ztschr. f. Hyg. u. Infektionskr.* xciv. 1–28.

Munk (F.). (1917.) Kriegserfahrungen bei Malaria.—*Berlin. klin. Woch.* liv. 1131–4 ; 1152–6.

Newham (H. B.). (1923.) Administration of Quinine *per rectum.* [Correspondence.]—*Jl. Trop. Med. & Hyg.* xxvi. 272.

Pais (A.). (1923.) La radiothérapie employée comme excitant dans le traitement du paludisme. La fonction sociale.—*Bull. Soc. Path. Exot.* xvi. 244–249.

Prain (D.). (1924.) Cinchona Bark and its Alkaloids. [Report of Lecture delivered before the Chadwick Trustees.]—*Brit. Med. Jl.* June 7. 1023–1024.

Ramsden (W.), Lipkin (I. J.) & Whitley (E.). (1918.) On Quinine in Animal Tissues and Liquids, with Methods for its Estimation.—*Ann. Trop. Med. & Parasit.* xii. 223–258.

Ravaut (P.), Reniac, de Kerdrel & Krolunitsky. (1917.) Le paludisme d'Orient vu à Marseille.—*Presse Méd.* xxv. 473–476.

Razzak (A.). (1917.) Use of Quinoidine. [Correspondence.]—*Indian Med. Gaz.* lii. 179.

Rieux (J.). (1913.) Mode d'action de la quinine sur *Plasmodium vivax* (var. *magna* du Prof. Laveran) de la tierce et de la double-tierce bénigne de rechute. —*Bull. Soc. Path. Exot.* vi. 153–156.

Rogers (L.). (1918.) The Advantages of Intramuscular Injections of Soluble Cinchonine Salts in Severe Malarial Infections.—*Brit. Med. Jl.* Oct. 26. 459–461.

Ross (R.). (1910.) The Prevention of Malaria. London. John Murray.

——. (1914.) Intramuscular Injections of Quinine. [Correspondence.]—*Jl. Trop. Med. & Hyg.* xvii. 286–288.

——. (1921.) Observations on the Principle of Repeated Medication for curing Infections.—*Brit. Med. Jl.* July 2. 1–4.

Row (R. W. H.). (1919.) Observations on the Pathology and Treatment of Malaria.—*War Office. Observations on Malaria by Medical Officers of the Army and Others.* 259–298. [H.M. Stationery Office.]

Schilling (Cl.) & Boecker (E.). (1919.) Ueber die Speicherung von Chinaalkaloiden in Blutzellen.—*Deut. Med. Woch.* xlv. 682–684.

Seguin. (1921.) Du traitement du paludisme, maladie essentiellement curable. —*Bull. Soc. Path. Exot.* xiv. 109–116.

——. (1922.) Du traitement du paludisme, maladie essentiellement curable (2e communication).—*Ibid.* xv. 237–246.

Seidelin (H.). (1922.) Au sujet des comprimés de quinine.—*Bull. Soc. Path. Exot.* xv. 686–690.

Sergent (E.). (1921.) [Abstract of paper by Génévrier on Prophylaxis du paludisme en milieu militaire.]—*Bull. Inst. Pasteur.* xix. 524.

Silvestri (S.). (1923.) Assorbimento, eliminazione, tossicita della cinconina. —*Policlinico.* Sez. Med. xxx. 601–610.

Simpson-Wells (A.). (1917.) Notes on Malaria.—*S. African Med. Rec.* xv. 344–347.

Stephens (J. W. W.), Yorke (W.), Blacklock (B.), Macfie (J. W. S.), Cooper (F. C.) & Carter (H. F.). (1918.) Studies in the Treatment of Malaria. xv. A Factor hitherto overlooked in the Estimation of the Curative Value of Treatments of Malaria.—*Ann. Trop. Med. & Parasit.* xii. 201–210.

Telang (R. H.). (1916.) Quinoidine. [Correspondence.]—*Indian Med. Gaz.* li. 474–475.

Vaughan (J. C. S.). (1921.) A Preliminary Note on the Use of *Vitex Peduncularis* in Malarial Fever and in Blackwater Fever.—*Brit. Med. Jl.* Feb. 5. 186–188.

Walch (E.) & Walch-Sorgdrager (B.). (1921.) [In Dutch and English.] Een Malaria-Epidemie, veroorzaakt door *M. sinensis.*—*Meded. Burgerlijk. Geneesk. Dienst in Nederl.- Indië.* 2–47.

Waters (E. E.). (1916.) The Value of Quinoidine in Malaria.—*Indian Med. Gaz.* li. 335–338 ; 437.

Wenyon (C. M.). (1921.) The Incidence and Aetiology of Malaria in Macedonia. —*Jl. Roy. Army Med. Corps.* xxxvii. 172–192 ; 264–277 ; 352–365.

Willcox (W. H.). (1920.) Mode of Quinine Administration. [Correspondence.] —*Brit. Med. Jl.* Jan. 31. 168–169.

Yorke (W.) & Macfie (J. W. S.). (1924.) Observations on Malaria made during Treatment of General Paralysis.—*Trans. Roy. Soc. Trop. Med. & Hyg.* xviii. 13–33.

Young (T. C. McC.). Fourteen Years' Experience with Kala-Azar Work in Assam.—*Trans. Roy. Soc. Trop. Med. & Hyg.* xviii. 81–97.

LEPROSY.

Vedrenne (P.). **Rapport présenté à la IIIe Conférence internationale de la lèpre.**—*Rev. d'Hygiène.* 1924. Mar. Vol. 16. No. 3. pp. 261–269.

This paper deals with the incidence of leprosy in Southern France, where the indigenous focus in the Alpes-Maritimes has greatly decreased from the 98 cases collected by Boinet and Ehlers in 1900 and is now almost extinct. On the other hand, by 1910 59 imported cases had entered the country, chiefly through Marseilles, while during the war at least 300 have been known; these were mainly in coloured soldiers from the colonies, including 173 from Senegal, 34 from Indo-China, 19 from Madagascar and 6 from Morocco; Toulouse has received a few from Spain, but no new cases are known to have arisen from them in France. Of 195 cases examined, 81 were macular, 28 nodular and 23 nerve forms.

L. Rogers.

Truffi (M.). **La lebbra in Sicilia.**—*Giorn. Ital. d. Malattie Vener. e d. Pelle.* 1924. Apr. Vol. 65. No. 2. pp. 746–752.

This paper is, in the main, statistical. During the period 1867–1875 Profeta met with 114 cases of leprosy; in the succeeding six years another 32. Ferrari, for the period 1879-1893, recorded 37 cases, nearly all in the Provinces of Syracuse and Catania. Tommasoli collected 70, distributed amongst 27 Communes; of these 43 only were still living when his figures were published. Finally, it has been estimated that between 1867 and 1911 there have been 315 cases in Sicily. A circular letter sent to those practising in the country districts led to the reporting of 36 more, but these figures are not to be regarded as very exact. Recently the Ministry has issued orders for the compulsory notification of cases, but many of the medical men have not sufficient experience to diagnose the disease in its early stages, and, secondly, there is a tendency, as elsewhere, for patients and their relatives to conceal their state. It is probable therefore that there are several cases still unrecognized and unreported.

H. Harold Scott.

Morin (J.). **La lèpre dans le Djoloff (Sénégal).**—*Bull. Soc. Path. Exot.* 1924. July 9. Vol. 17. No. 7. pp. 592–596. With 1 map in text. [1 ref.]

Among 60,000 to 70,000 people of two tribes 40 lepers are known, which is an under-statement. For these it is advisable to form a leper village, with separate quarters for the two affected tribes, under a European doctor, but financial difficulties will be encountered.

L. R.

Dekester (M.). **Observations nouvelles de lèpre dans la région de Fez (Maroc). Faits précis de contagion. Considérations prophylactiques.**—*Bull. Soc. Path. Exot.* 1924. July 9. Vol. 17. No. 7. pp. 597–605.

During 13 months up to June, 1924, 39 cases of leprosy have been added to the 104 observed since 1920 in the Fez region of Morocco,

nearly all with advanced lesions of several years' duration. Examples are given of a conjugal infection and one of three children of a first marriage infected by their leprous step-mother, the abundance of biting parasites favouring infection.

L. R.

Araujo (Heraclides Cesar de Souza). **Frequencia e Prophylaxia da Lepra nas Guyanas e em Trinidad.** —Reprinted from *Supplemento do "Boletim Sanitario."* 1923. Dec. No. 5. 129 pp. With 60 figs. & 8 maps. 1924. Rio de Janeiro: Off. Graph. da Inspectoria de Demographia Sanitaria.

This work comprises an account of a visit to the Guianas and Trinidad, made in 1922 by the Director of the Public Health Service of Pará, to study the question of the prophylaxis of leprosy with a view to adopting new measures in the State over which he has sanitary control. The general health conditions of the countries visited have already been reported in "Brazil Médico."

Starting with French Guiana, Dr. Araujo found here no reliable statistics of the number of lepers. According to one statement there were 300, according to another, a rash generalization, there were thousands. From his own observations, necessarily incomplete, the author estimates at least 600, or 1·5 per cent. of the population. A small leprosarium was established in 1828 by the owner of an estate to accommodate those among her slaves who were infected. Seven years later the Government transferred all lepers there. Dr. Stévenél, a former head of the leprosarium, was greatly averse to sequestration of lepers, saying that sanatoria should be special hospitals merely and not places for segregation. In 1891 rules were laid down for dealing with leprous patients, but these were not kept and the record was made that "Regulations neither have given nor can give any results." These views did much harm in retarding useful measures; as the author states: "The Sanitary Laws and Regulations are good, the execution of them is bad." Neither notification nor segregation was compulsory, so that in 1922 there were only 71 patients in the Acarouany Leper Asylum; 57 were males, 14 females. 17 were of the nodular type, 33 anaesthetic, and 21 mixed. There is a second small leprosarium in the island of St. Louis for infected prisoners. Here there are 30 huts with two beds each. In this asylum there were 57 patients, 52 of whom were French and 5 Arabs from Algeria. Enquiry revealed the fact that all had acquired the disease in Guiana. Their lot is a sad one; there are a few small gardens, but no land for agriculture and no distractions; they are poorly fed and are apparently untreated.

After much search the author has succeeded in obtaining copies of all Laws, Decrees, and Regulations referring to the prophylaxis of leprosy, and these are transcribed in an appendix to the account of each Colony and to them very pertinent remarks are added. Thus, orders were promulgated that all lepers who desired it should be admitted to the leprosarium, but, as Dr. Araujo points out, only a small proportion apply, whereas segregation should be compulsory. In his own words: "The sanitary organization at Cayenne resulting from the decrees appears to be very good, but these have not been

carried out although twelve years have elapsed " since their promulgation. In short, as stated by JEANSELME, they are rules " pour épater " and not for execution.

Dutch Guiana was next visited, and three leper asylums were inspected, namely, Gerardus Majella (for Catholics), in Paramaribo, Groot Chatillon (non-sectarian) and Bethesda (for Protestants) in the interior, on the right bank of the Surinam River, inaugurated in 1885, 1887 and 1889 respectively. The two latter are of the agricultural colony type. Groot Chatillon is the official asylum, receiving patients irrespective of their religion, and marriage is allowed. The number of lepers in the whole Colony is believed to be about 1,500, but accurate statistics are not kept. The disease is said to have been first introduced by Africans, and later by Hindu and Chinese coolies. In the three institutions in 1921 there were 353 patients. All are under the control of the Chief of the Sanitary Department of the Colony. All cases notified by medical men, all who voluntarily present themselves, and all discovered by the police and the sanitary authorities are brought before a Board of five medical men for examination. As soon as the diagnosis is verified the patient is registered and he is sent to one of the asylums or isolated at home, while suspected cases are kept under observation and re-examined later. The leprosaria are described and photographs are given showing some of the houses, their situation and the accommodation. The patients are well cared for; all who are able work in the fields, the gardens, the offices, the carpenters' shops, in the laundry or in the sewing-room. There is a concert room and an orchestra, and ground for tennis and football. Treatment by chaulmoogra oil, by injection and by mouth, is carried out regularly and systematically.

Proceeding to British Guiana he visited the Mahaica leprosarium, by by which he appears to have been particularly struck and of which he gives a detailed description. This has been in existence for 60 years, during which time, he was informed, one doctor and two nurses had contracted the disease. On the day of his visit there were 257 patients, of whom 164 were male; during the ensuing month 12 more were admitted. Of the 269 there were 113 of the nodular type, 147 of the maculo-anaesthetic, and 9 mixed. The author was informed that there were no unsegregated lepers and that this figure constituted the total for the Colony; but, he naively states, on the day he embarked for Trinidad, among the persons accompanying the Bishop of Georgetown on board was a girl affected with nodular leprosy who was " passing to and fro quite freely in absolute violation of Law 15 of 1905." As in the case of the other Colonies, he gives a transcription (in Portuguese) of the Laws and Regulations, but adds, in the case of British Guiana, that he thinks they are too stringent and doubts whether they are carried out.

Lastly he journeyed to Trinidad and visited the Leper Asylum of Cocorita and the Lazaropolis of Chacachacare in course of erection. Of the former is given a brief account of its history since its foundation in 1845 and a general description of the buildings, their arrangement and cost of upkeep. The sexes are rigidly separated, " but nevertheless some births are registered." He had been told that this asylum was very old and had many defects, and he was agreeably surprised, but apparently thought the expenses were great, for he states: " We should be indeed happy if each Brazilian State had an establishment equal to this and could spend annually 800,000 dollars in helping the lepers." There is a prison connected with the asylum in which are kept not

only those sentenced to imprisonment by the Courts, but also any lepers in the asylum who commit infringements of discipline. These are under the Administrator-General of Prisons without any intervention by the asylum superintendent, except as regards diet. There were, when the author visited the asylum, 540 inmates disposed in 18 large pavilions, 12 for males, 6 for females. Children of either sex under 8 years of age were given one of the pavilions for women. He saw four or five children below the age of 6 years who were leprous, and one of the nuns who accompanied him, and who had worked there for more than 20 years, informed him that a child born there had shown signs of leprosy when two months old. He remarks that in this institution he saw worse cases of facial deformity than he had seen in any other country. Dr. Araujo greatly deplores the fact that in an establishment so well administered as the asylum of Cocorita, with so many patients isolated, of all races and origins, such abundance of material should be allowed to waste. No research was done, no clinical records even were kept, search for the bacilli was only carried out in doubtful cases, a statement from two medical men that a person is leprous being sufficient for isolation. Incidentally, he mentions that he saw a case of lupus vulgaris isolated as a leper amongst the inmates. To his questions as to which was the predominating form clinically, what percentage of each form revealed the presence of Hansen's bacillus, what were the results of the Wassermann test, there was no reply obtainable. No systematic treatment by any of the new methods is carried out, he affirms, but he nevertheless mentions that the mortality is remarkably low, only 8·5 per cent., as compared with 20 at Tocunduba. During 1920 there were 128 admissions to the asylum; of these two were doubtful, and one was not suffering from leprosy at all. Of the remainder 37 were of the nodular type, 86 anaesthetic, and 2 mixed. The total number of cases in Trinidad and Tobago is estimated to be between 700 and 800. The Regulations applicable to lepers and asylums in this Colony are transcribed without comment.

The author sums up the results of his investigations, detailed in this important record, in a final series of conclusions from which the following are abstracted :—

1. Segregation should be compulsory. 2. Agricultural colonies should be established at a distance from the centres of population, preferably on islands. 3. Limited self-administration should be allowed, with the Governor as the sole intermediary between themselves and the constituted authorities. 4. Cohabitation of married lepers should be permitted. 5. Children of leprous parents should be removed immediately after birth and education provided for up to the age of 14 years. 6. Lepers should be provided with every comfort, distractions, and even luxuries as far as possible, and should be given work to do in the garden, fields, offices, and at trades. They are far happier at work. 7. The establishment of hospitals within the leper colonies and of laboratories for diagnosis and research are essential. 8. The administrative section should be separated from the patients' area, and in the latter there should be small separate dwellings for two, four, or six patients each.

The book is a most helpful record, giving the unbiased opinion of a recognized authority on this subject relative to the conditions as they exist in countries other than his own, with useful hints as to points in which they can be improved or altered with advantage.

H. Harold Scott.

i. Araujo (H. C. de Souza). **A prophylaxia da lepra no Pará.**—*Brazil-Medico.* 1924. July 26. Year 38. Vol. 2. No. 4. pp. 48–50.

ii. ——. **A lepra no Estado do Pará. Estatistica de 30 mezes.**—*Sciencia Medica.* Rio de Janeiro, 1924. July 31. Vol. 2. No.7. pp. 366–369.

i. There are in the State of Pará large numbers of lepers. Prophylactic work was begun on June 28th, 1921, with the founding of a dispensary at Belém. In 6 months 600 lepers were registered there; at the end of the first year 1,359, and in June, 1924, there were 2,200, the total population being 120,000, approximately 18 per mille for Belém and 3·2 for the State. There is now a large "Lazaropolis" in Prata at which patients are received for treatment; it also contains a crèche of 20 beds for children born in Prata; there is a school for leprous children and a well-developed colony system for work and administration. Husbands and wives are allowed to live together when one or other is leprous, the healthy being examined every fortnight. The medical treatment adopted is that of Heiser—a mixture of chaulmoogra and camphorated oil in equal parts with the addition of 3 per cent. resorcin. Intramuscular injections in doses of 1–3 cc. are given twice weekly, if well tolerated.

ii. Covers much the same ground, though slight variations in figures indicate that the two papers were written at different dates.

H. Harold Scott.

de Almeida (Ribeiro). **O problema da lepra.**—*Bol. Soc. Med. Cirurg. de S. Paulo.* Brazil. 1923–24. Nov.–Dec.–Jan.–Feb. Vol. 6. 3rd Ser. Nos. 9–12. pp. 131–132.

In São Paulo the number of lepers is given as 1 per mille, attributed in part to immigration from neighbouring States. The "Model Leprosarium" in S. Paulo, instituted by Dr. Rodrigues Alves, is insufficient to deal with all the cases. In Pará, however, the latest statistics show 1 per cent. of the population as leprous, but, writes the author, this is looked upon with indifference. It is suggested that several leprosaria of the S. Paulo type be erected at various places in the State and that notification and isolation of cases should be made compulsory.

H. Harold Scott.

Barrera (F. de P.) & Chavarria (A. Peña). **The Acute Exanthem of Leprosy.**—*Bull. Johns Hopkins Hospital.* 1924. May. Vol. 35. No. 399. pp. 147–158. With 3 plates & 4 charts. [13 refs.]

The authors have had the advantage of studying the occurrence of acute febrile exacerbations in leprosy in the three leper colonies of Colombia, with 6,500 lepers. They think these symptoms have not been sufficiently described by other authors, and prefer to call them "the acute exanthem of leprosy." They occur mostly in adult life, especially during physiologicial changes in women and in young married lepers, and may also be brought on by alcoholic excess or by chaulmoogra oil treatment. The fever reaches its height in the first three days and subsides by lysis after six to twelve, or rarely 20 days. The well-known appearances in these attacks and the accompanying breaking up of the bacilli in the lesions are next described, and the improvement, or a change from the chronic nodular to the maculo-anaesthetic form, following the reaction is mentioned, the changes being

regarded as a defensive reaction against the invading bacilli ; and they are inclined to agree with ROGERS that the benefit following treatment by chaulmoogra oil preparations is not due to direct action of the drug on the bacilli, but rather to some substance formed in the body under the influence of the oil, such as lipase ferment as suggested by him.

L. R.

POWELL (A.). **Hypertrophy of the Male Nipple in Leprosy.**—*Brit. Jl. Dermat. & Syph.* 1924. May. Vol. 36. No. 5. (No. 427.) p. 203. With 3 figs.

The writer recurs to this subject, and records that out of a total of 385 male lepers both nipples were enlarged in 280 and one in 10 more, and both in 3 of 7 female children below puberty, but in the child-bearing period the test is unreliable. Sections of the nipple show increased fibrous tissue, but seldom any lepra bacilli.

L. R.

LITTLE (E. G. Graham). **Case of Macular Leprosy.**—*Proc. Roy. Soc. Med.* (Sect. of Dermat.) 1924. June. Vol. 17. No. 8. p. 59. (Discussion pp. 60–61.)

The interest of this case resides in the patient having lived in England since 1896, before which she was in Calcutta for ten years. The incubation period appears to have been very long as the first signs appeared in 1917.

L. R.

PINEDA (Eloy V.). [In English & Spanish.] **Pathological Survey of the Causes of Death in Lepers at Culion. Estudio analitico de las causas de muerte en los leprosos de Culion.**—*Jl. Philippine Islands Med. Assoc.* 1924. May. Vol. 4. No. 5. In English pp. 169–178. [15 refs.] In Spanish pp. 197–200.

Since March 1922, 300 post mortems have been made at Culion on lepers dying in the colony, and the causes of death classified, the principal causes being tuberculosis 24 per cent., nephritis 16·3 per cent., bronchopneumonia 9·3 per cent., dilated heart 7·6 per cent., malaria 5·6 per cent., endocarditis 5 per cent., amoebiasis 3·3 per cent., lobar pneumonia and undetermined each 3 per cent., gangrene and leprosy each 2·3 per cent., and the remainder a variety of diseases each causing less than 2 per cent. These figures are in agreement with other records, in showing a high mortality from tuberculosis and nephritis respectively, but differ widely from those of MCCOY in Hawaii who, mainly apparently on clinical grounds, attributed about 75 per cent. directly to leprosy and only 3·5 per cent. to tuberculosis. Bevan RAKE is quoted as having performed 90 autopsies in the Trinidad Leper asylums and found about 30 per cent. of the deaths to be due to tuberculosis, while in another series of 78 he found nephritis in 29·4 per cent. At Culion practically one-fourth of the lepers died of tuberculosis, and the treatment with ethyl esters of chaulmoogra oil was found to be injurious in 31 per cent. of such complicated cases. Nephritis is predisposed to by the damage to the skin and secondary infections in leprosy, while ethyl ester chaulmoograte was found to have an irritant effect on the kidneys, about 30 per cent. of the urines sent to the laboratory being positive for albumen early in the treatment, while after a half to two years' treatment of 1,120 specimens examined 95 per cent. showed albumen and 88 per cent. contained casts. Post mortem the majority

of the nephritis cases were of the parenchymatous class, and no lepra bacilli were ever found in smears of the kidneys. Neoplasms caused 1·6 per cent. and beriberi 1·3 per cent. of the deaths.

L. R.

Lloyd (R. B.), Muir (E.) & Mitra (G. C.). **The Effect of Antisyphilitic Treatment on the Wassermann Reaction in Leprosy.**— *Indian Jl. Med. Res.* 1924. July. Vol. 12. No. 1. pp. 213–220. [9 refs.]

In 16 cases of anaesthetic leprosy with positive Wassermann reactions treated with antisyphilitic remedies the reaction was favourably influenced in 12, or 75 per cent., the primary nerve cases being most improved, so the authors consider that all Wassermann positive nerve cases should receive antisyphilitic treatment. Of 46 nodular and mixed leprosy cases in 24 the reaction was similarly favourably influenced, but in the remaining 22 it was unchanged by antisyphilitic treatment, so in this case they advise such treatment only if there is a history of syphilis complicating the leprosy as well as a positive Wassermann. On the other hand, they consider that the high proportion of 62 per cent. of positive Wassermanns they found in leper children, against 17 per cent. in controls, indicates that in them the high proportion of plus reactions cannot be attributed to complicating syphilis.

L. R.

Taylor (J.) & Malone (R. H.). **Complement Fixation in Leprosy with "Defatted" *B. tuberculosis* Antigen.**— *Indian Jl. Med. Res.* 1924. July. Vol. 12. No. 1. pp. 127–137. [11 refs.]

Antigens made from various acid-fast bacilli have been tried without success in the diagnosis of leprosy by the complement fixation test, a summary of which trials is first given, but the authors have not found any record of their use after removal of the lipoids. This they have done by means of Dreyer's method of defatting tubercle bacilli by formalin and acetone, a fine grey powder being obtained, keeping well in a desiccator. A suspension of this is standardized by having an opacity equal to that of a 1–2,000 suspension of barium sulphate in 1 per cent. sodium citrate, all but very fine particles of the bacillary powder being removed by a hand centrifuge. After determining with known leper and non-leper sera the antigenic and anti-complementary power of this antigen, it is titrated in quantities of 2 to 12 drops in a system containing a total of 25 drops, which was never found to be anti-complementary. The sera of 100 lepers in the Rangoon Leper Asylum have been tested with this antigen, the fixation of 2 or more minimal haemolytic doses of complement only being regarded as a positive reaction, and all 37 nodular leprosy cases, all but 2 of 50 nerve cases, or 96 per cent., and 12 of 13, or 92 per cent., of mixed cases gave positive results, making 97 per cent. of the total cases. On the other hand, 14 non-leper, non-tubercular and Wassermann negative control sera, as well as 23 Wassermann-positive sera, gave negative results. The great majority of the leper asylum cases had had the disease for three years and longer, and the authors have not yet been able to test a sufficient number of early cases to decide the diagnostic value of the new test in them, but the high proportion of plus reactions in advanced nerve cases lead them to hope it will also be of value in early cases, in which case an important advance will accrue. They also tested the sera of 30 cases of tuberculosis, but obtained positive reactions in 20 per cent. only.

L. R.

Wade (H. W.) & Lara (C. B.). [In English & Spanish.] **A Plea for the Early Recognition of Leprosy, with Notes on Diagnosis and Methods. La necesidad del diagnostico precoz de la lepra con apuntes sobre diagnostico y metodos.**—*Jl. Philippine Islands Med. Assoc.* 1924. Apr. Vol. 4. No. 4. In English, pp. 132–140. In Spanish, pp. 159–162.

The failure of segregation in the Philippines to reduce the incidence of leprosy as rapidly as had been hoped is largely attributable to the great difficulty in finding and isolating the cases in their earlier stages. Illustrative examples are quoted of the early stages not having been recognized, and of the disease being allowed to reach a stage far less amenable to treatment before a positive diagnosis was made. The training of officers of the health service, physicians, medical students, presidents of sanitary divisions, nurses, constabulary officers and school teachers in the early signs of leprosy is, therefore, necessary, and all doubtful cases should be sent up for verification by expert medical officers, especial attention being paid to the more infectious cutaneous form of the disease, as the early nerve cases are less dangerous to the community. The early lesions are next described, the reddish brown macules and the loss of sensation to light pricks with a sharp needle and to touch being emphasized, and the loss of pigmentation in patches, while epistaxis should lead to an examination of the nasal mucous membrane for lesions. All doubtful cases should be re-examined every three months to detect the earliest definite signs. In making bacteriological examinations of suspected lesions, several smears from different lesions should be made by an actual cut into the deeper layers of the skin, and scrapings free from any material amount of blood taken, the slides dried in the air and sent to a laboratory for report. The writers conclude: "It is felt that if an anti-leprosy campaign is intensified along these lines it will be decidedly more effective." Illustrated pamphlets should be used for educative purposes.

L. R.

i. Travers (E. A. O.). **The Treatment of Leprosy at the Leper Asylum, Kuala Lumpur, Selangor, F.M.S.**—*Far Eastern Assoc. Trop. Med. Trans. Fifth Biennial Congress, Singapore.* 1923. pp. 352–358.

ii. Wheatley (A. H.). **The Treatment of Leprosy as carried out at the Leper Asylum, Pulau Jerejak.** *Ibid.* pp. 359–362.

iii. Wade (H. W.). **Leprosy Work in the Philippines.** – *Ibid.* pp. 363–377. [5 refs.]

iv. Van Driel (B. M.). **Affections of the Eye in Leprosy.** – *Ibid.* pp. 378–391. [34 refs.]

v. Guerrero (Luis E.). **The Present Status of the Anti-Leprosy Campaign in the Philippine Islands.**—*Ibid.* pp. 392–405.

vi. Travers (E. A. O.). **The Segregation of Lepers.** *Ibid.* pp. 406–410.

i. *Vide ante* p. 514.

ii. Wheatley deals with treatment at the Pulau Jerejak leper asylum in Penang. In 1914 Heiser's intramuscular injections of chaulmoogra oil were used, and later Rogers' sodium gynocardate A and

hydnocarpate intravenously, or a combination of the latter one part and sodium soyate two parts, all in 3 per cent. solution; and Muir's E.C.C.O. mixture intramuscularly and daily as a spray for the nasal mucous membrane. Reactions were followed by improvement, a succession of slight reactions best maintaining progress; a change of drug is tried when the condition becomes stationary, small doses, stopped if reactions occur, being used in eye and laryngeal complications. "With the above lines of treatment the majority of cases show signs of improvement," and notes of three parallel cases are given.

iii. Wade, of the Culion Colony, first deals with the segregation question, and points out that the compulsory isolation was intensely unpopular and that two-thirds of the leper colonists live in small houses built by themselves. This makes efficient treatment difficult, but it is not to be denied that in our present state of knowledge all cases should be segregated as early as possible, and that the frequent ill-informed agitation does harm. The limitation of financial resources prevents an ideal plan being carried out, one-third of the Health Service appropriations being already spent on leprosy work. Recent treatment in the colony is then dealt with. (See this *Bulletin*, *ante* p. 177.)

iv. Van Driel deals with eye affections in leprosy in Sumatra, as seen in examination of 250 lepers in the Asylum near Deli, mostly far advanced cases in Chinese, amongst whom syphilis is common, and 350 Bataks, including many early cases in a race seldom infected with syphilis in an asylum at 1,000 feet elevation; at a third asylum nearly 500 more were seen; yet he found only 9 blind patients, and only 7 due to leprosy, or 0·5 per cent. of nearly 1,300 examined. The most important lesions met with in the eye itself, after excluding those due to other diseases, were the following. The cornea frequently shows ulcers and opacities, but he thinks very few of these are leprotic in nature and he never found actual lepromata on the cornea, but a superficial punctate keratitis was found in 3 to 4·3 per cent. of cases, usually very mild and likely to be overlooked unless examined by focal illumination after instillation of cocaine and fluorescin. More frequent and important are the well-known iritis and iridocyclitis, 79 cases, or 22 per cent., being seen in one of the Batak asylums where syphilis was rare. The bacillus he thinks gains access through the blood stream, as both eyes are frequently attacked at once, this condition being the most frequent cause of blindness in lepers.

v. Guerrero deals with the present status of the anti-leprosy campaign in the Philippine Islands on the basis of figures supplied by the Health Service. From the opening of the Culion Colony in June 1906 up to May 1923, 14,832 lepers had been sent there, and 444 more are now in the San Lazaro Hospital at Manilla, making a total of 15,276 collected in 17 years. Only 5,808 now remain, 9,706 having succumbed to the disease, with the exception of a few escaped or released. During the last two five-yearly periods the reduction of admissions has been 24·8 and 8·7 per cent. respectively, while the four more heavily infected provinces show reductions between 1911–15 of 26·5, 15·5, 49·6 and 58·1 per cent., but the writer does not admit these figures as showing "a period of frank decline." During 1921 and 1922 of 1,343 lepers interned the majority, or 804, were cases of up to three years' duration, showing that new cases are arising, and the persistence of the disease is attributed to the forcible deportation to a distant island, causing concealment of cases, and to the system of segregation. The

average duration of the disease of four years when discovered is sufficient to enable new infections to have occurred, especially among the more susceptible young persons, 40·8 per cent. of recent admissions being under 25 years of age. He therefore advocates the establishment of sanatoria-hospitals at central points within visiting reach of friends and relations of the inmates, and the registration and periodical examination of all contacts with lepers so as to detect early cases amenable to treatment. The separation of the children born to lepers from their parents is imperative, but is still not carried out in the leper colony.

vi. Travers urges that the *method* of segregation is of vital importance to success, it being essential to furnish conditions of greater comfort and happiness than in the homes of the lepers, in order to attract them voluntarily, and to permit the visits of relations and friends under careful control. A leper institution should have ample good land for cultivation with only ordinary fencing, and not be within five miles of a town or two from a considerable village. Cheap temporary wards and material for building their own houses should be supplied, with a small hospital for helpless cases. At Kuala Lumpur some fifty such houses have been built by the patients at their own cost; they perform all the work of the colony, except treatment and clerical work, and grow their own fruit and vegetables. A daily visit of an European medical superintendent is necessary. Very similar conditions have proved successful in attracting the lepers at Lao Simmino, in Sumatra, under Dr. Van Driel.

L. R.

Bassett-Smith (Percy W.). **The Campaign against Leprosy.**—*World's Health.* 1924. July. Vol. 5. No. 7. pp. 208–210.

The writer deals with the campaign against leprosy of the British Empire Leprosy Relief Association, giving recently published figures indicating that about 300,000 of the world's estimated 2,000,000 lepers are in British territories. To deal with these it is proposed to establish clinics at all hospitals in the infected areas, where the methods of treatment, which have resulted in many cases of permanent cure, as reported by Muir in Calcutta, may be generally applied to early cases, with good hope of rendering them uninfective at a low cost. Further research should result in still more effective drugs being discovered.

L. R.

McDaniel (F. L.). **Report of a Death occurring during Treatment for Leprosy with Chaulmoogra Oil Derivatives.** *U.S. Nav. Med. Bull.* 1924. May. Vol. 20. No. 5. pp. 594–596.

In a leper colony at St. Croix a male negro in an advanced state of nodular leprosy with laryngeal complication had several severe reactions after 1 and 2 cc. doses of ethyl chaulmoogrates from Honolulu, and also suffered from bronchitic and asthma-like attacks. In one of these he died with signs of laryngeal oedema, but no necropsy was obtained. It is stated that the records of the case are "none too full and no definite conclusions can be drawn therefrom."

L. R.

Aoki (T.), Kawamura (M.), Kamikawa (Y.) & Fukamachi (T.). **On the Treatment of Leprosy by the Intravenous Injection with Derivatives of Gynocard Oil.** - *Japan Jl. Dermat. & Urol.* 1924. Apr. Vol. 24. No. 4. In Japanese, pp. 364–398. With 2 plates & 10 figs. [141 refs.] [English Summary, pp. 33–43.]

These workers discuss recent treatments of leprosy, and point out that intravenous injections are less painful and more exact and rapid in their action, the sodium preparations being also soluble and free from risk of embolus formation. They record numerous experiments with these various preparations in guineapigs and rabbits. They found antileprol (ethyl chaulmoograte) and hydnocardin more toxic and irritating, especially to the lungs, than the sodium salts, all the 17 cases treated with ethyl esters suffering from severe cough. They therefore selected sodium preparations of chaulmoogra oil, especially 1 per cent. leprol solution, for intravenous injections in man at 3 and 4 day intervals ; of 25 patients 2 were much improved and 7 slightly improved on intravenous injections, and of 43 on intramuscular doses 3 were much improved and 7 slightly improved.

L. R.

Pestonjee (R.), Nicholls (Lucius) & Felix (J. E.). **The Treatment of Leprosy in Ceylon.**—*Ceylon Jl. Science.* (Section D. Med. Science.) 1924. June 4. Vol. 1. Pt. 1. pp. 41–46. [1 ref.]

The writers have worked in the Ceylon Leper Asylum, where they class the 489 lepers as : (1) Progressive nodular and mixed, 146 ; (2) Progressive anaesthetic, 4 ; (3) Nodular and mixed stationary for six or more months, 144 ; (4) Anaesthetic, stationary for six or more months with irremediable destruction of nerves, 56 ; and (5) Chronics resident for ten or more years with no active lesions for many years, 139 ; and they recognize that the last two classes, or 40 per cent. of the total, cannot be expected to improve under any treatment. They point out that : " The great majority of segregated lepers are suffering from the effect of the past active processes of the disease, such as contractures, lost digits, destroyed nerves and extensive disfigurement, and from these effects no recovery is possible." They agree with Muir that the tendency in anaesthetic leprosy is towards complete arrest of the disease, but in Ceylon the earlier stages of this type are rarely segregated. Mixed leprosy cases are more severe and generally die from the disease within ten years. Two years ago 32 nodular cases, many of them extensively affected, were selected for treatment with ethyl chaulmoograte in Muir's E.C.C.O. mixture. At the end of this time 10 had improved, 16 had fresh lesions in the course of the treatment and showed no general improvement, while 6 had died, " the injections having been followed in many cases by a definite shrinkage or even disappearance of the nodules." During the last six months 46 earlier cases have been treated, with improvement in 19, no general improvement in 26, and one death. In two, most of the signs have disappeared. They conclude that recovery cannot be expected in the majority of the class of cases seen in leper asylums, and that treatment must be continued for several years.

L. R.

Muir (E.). **Is Leprosy Curable ?**—*Indian Med. Gaz.* 1924. June. Vol. 59. No. 6. pp. 297–298.

The writer analyses his results at the leprosy out-dispensary of th Calcutta School of Tropical Medicine in 203 cases treated for fro

3 to over 24 months—80 of them for under 6 months—classing them as follows: "'A' represents nerve cases which have been diagnosed from the presence of anaesthesia and other nerve symptoms, but in which the bacteriological examination was negative for lepra bacilli. 'B' represents those cases in which the bacteriological examination was positive. A_1 represents primary nerve cases and A_2 secondary nerve cases. B_1 includes early bacteriologically positive cases, B_2 those of a more advanced degree, and B_3 cases with great lepromatous thickening of the skin and very large numbers of lepra bacilli."

Table of 203 Dispensary Cases that have Persisted with Treatment up to Date, or to a Relative Cure.

Length of Treatment in Months.

		1–3	4–6	7–9	10–12	13–15	16–18	19–21	22–24	Over 24	Total.
A1	All signs of active disease gone ..	1	4	4	7	3	6	3	2	2	32
	Still signs remaining..	13	5	2	9	2	3	2	—	—	36
A2	All signs of active disease gone ..	—	—	—	—	—	—	—	—	—	—
	Still signs remaining ..	5	5	3	1	1	1	2	1	—	19
B1	All signs of active disease gone ..	—	—	1	4	1	1	—	1	—	8
	Still signs remaining ..	10	4	3	2	3	1	—	—	—	23
B2	All signs of active disease gone ..	—	—	—	1	—	1	1	—	—	3
	Still signs remaining ..	21	6	5	8	6	6	3	3	10	68
B3	All signs of active disease gone ..	—	—	—	—	—	—	—	—	—	—
	Still signs remaining ..	5	1	1	1	6	—	—	—	—	14
Total		55	25	19	33	22	19	11	7	12	203

A1 = Primary nerve cases. A2 = Secondary nerve cases coming on after B2 and B3.
B1 = Bacteriologically positive cases of 1st degree.
B2 = " " " 2nd "
B3 = " " " 3rd "

Of the total cases 43 had lost all signs of leprosy for from three months to three years; all but five of those had been treated for six months and upwards, so that of the 123 in that category 38 or 31 per cent. had cleared up; 27 were primary nerve cases, and the remaining 11 the first and second degrees of nodular cases. On the other hand, none of the secondary maimed nerve cases or of the extreme third degree of nodular cases had completely recovered, and he mentions that he has known the treatment wrongly discredited in some leper asylums because it failed to clear up mutilated cases with lost fingers and toes, of which he observes: "Many of such cases are no more suffering from leprosy than are pock-marked people suffering from smallpox. The disease has died out and has only left scars." In the primary nerve cases treated for a year or more 16 out of 23 were freed from all signs of the disease, and this favourable proportion increases steadily as the treatment progresses, while the same holds good to a more limited extent with B_1 cases, that is early skin and nodular ones. He therefore holds that "the table shows A_1 and B_1 cases can be almost invariably freed from all active signs of the disease, and we have in our hands a method of dealing with the disease which only needs to be efficiently applied to stamp out leprosy." For this purpose it is essential to have (1) sufficient dispensaries run by trained

doctors who have studied the disease, (2) diagnosis if possible in the A_1 and B_1 stage, and (3) treatment on the improved lines he has laid down.

L. R.

McCants (J. M.). **Leprosy in the Hawaiian Islands.**—*U.S. Nav. Med. Bull.* 1924. June. Vol. 20. No. 6. pp. 705–713. [4 refs.]

The writer reviews treatment in Hawaii after consultation with the local medical authorities. The vast majority of cases are in the Hawaiian or part Hawaiian population, who are heavy drinkers, while youth and early adult life are most affected. All suspected lepers are examined by a board of five physicians, including two bacteriologists, four of whom must agree in the diagnosis, but many lepers now come voluntarily for the sake of the present treatment, in which they have great faith; the milder cases are treated at Kahili hospital near Honolulu, and the more serious ones are sent to the Molokai colony. A standard tonic containing iron, arsenious acid, and strychnine is given in addition to ethyl chaulmoogrates, especially in nerve cases. "The recently discovered chaulmoogra-oil derivatives appear to be a specific in leprosy." The mixed ethyl esters of the entire fatty acid series of chaulmoogra oil plus 1 per cent. iodine by intramuscular injection is regarded as the best treatment, its continuous use having led to the following results: (1) Practically all early cases show marked improvement up to an apparent cure. (2) Many advanced ones show improvement. (3) About a third of all cases are sufficiently improved to be paroled; that is, an apparent cure. (4) Of 264 paroled since 1912, 40 returned with a recurrence and 22 have died from other causes. The organisms continuously disappear from the lesions. "It is believed that early detection of lepers and thorough treatment will effect a cure."

L. R.

Ogilvie (D. C.). i. [**Report of the Fiji Leper Asylum at Makogai.**]
ii. **Some Observations on Leprosy.**—*Fiji Ann. Med. Report for the Year ending 31st December, 1923.* pp. 24–27.

On 1st January 1923 there were 266 lepers present at Makogai. During the year the admissions were 62, deaths 18, discharged unconditionally 4, discharged on parole 17, remaining December 31st 289, an increase of 23. The lepers worked on the farm and at the manufacture of soap. In the course of treatment over 7,000 injections were given of various drugs; moogrol and chaulmoogra oil intravenously were of benefit in some only; tartar emetic intravenously caused unpleasant fever and pain without doing any good; urotropine is valuable in cutting short the reactionary fever and swelling and also the pains of nerve leprosy, proved very effective in a case of acute nephritis, and always induces strong diuresis, the routine injection being 10–15 grains in 4–6 cc. distilled water twice a week. Of hypodermic and intramuscular remedies he found sodium morrhuate the most effective and easily absorbed, and sodium hydnocarpate better than the gynocardate. In five cases lepra bacilli obtained from nodules and defatted by Dreyer's method were injected, with improvement in three only. Tuberculosis was the most serious complication, and hookworm infections require treatment with carbon tetrachloride.

L. R.

Gonzaga (Gavião). **Applicação do enteroantigeno no tratamento da lepra.—Ensaios da vaccinotherapia.** (**Nota prévia.**) [The Use of Intestinal Antigens in Leprosy. Vaccine Therapy.]—*Brazil-Medico.* 1924. May 17. Year 38. Vol. 1. No. 20. pp. 280–281. With 4 figs.

Having obtained good results in cases of psoriasis and chronic eczema from injections of autogenous entero-vaccines the author tried similar methods in 38 cases of leprosy. He relates in detail two cases, aged 25 and 45 years respectively. Both had extensively disseminated patches and some ulcerated lepromata. The first patient felt so much better that he returned to work and ceased treatment after 23 injections; the second, who had suffered from the disease since 1910, received 47 injections between August 1922 and January 1923. He, too, was greatly benefited, the maculae disappeared, the tubercles became smaller and the ulcers cicatrized. This improvement had been maintained when he was seen again in March 1924. In both patients, however, the bacilli persisted in the nasal mucosa.

H. Harold Scott.

Beukers (C. M.). **Thymolinjecties bij Lepra.**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1924. Vol. 64. No. 2. pp. 283–284.

Beukers recommends for the thymol treatment, suggested by Moehamad Hamzah [this *Bulletin, ante*, p. 182], the following prescription: thymol 9, camphor 3, cod liver oil 21 parts, 0·5 cc. to be injected intramuscularly every day. There is no pain and little infiltration.

W. J. Bais.

Gomes (José Maria). **Tratamento da lepra. Um caso de cura apparente.**—*Bol. Soc. Med. e Cirurg. de S. Paulo.* Brazil. 1923-24. Nov.-Dec.-Jan.-Feb. Vol. 6. 3rd Ser. Nos. 9-12. pp. 140–141. And *Ann. Paulist. Med. e Cirurg.* 1924. Apr. Year 12. Vol. 15. No. 4. pp. 77–79.

A brief account of a girl of 12 years who had shown symptoms of leprosy early in 1922. In January, 1923, there were extensive maculo-anaesthetic patches on both legs with some thickening of the skin. She was dull and apathetic and tired by the smallest effort. Lepra bacilli were found in smears of the nasal mucosa and in blood from the maculae. Injections of tarakthyl (0·5 cc. and increasing to 1 cc.) were well tolerated and there was no febrile reaction. Improvement was rapid; the patches diminished, sensibility returned and the patient lost her apathy. By October the lesions had disappeared and repeated examinations of the nasal mucosa and of blood from the old leprous sites failed to reveal any lepra bacilli.

H. Harold Scott.

Sarraut (A.). **Circulaire du ministre des colonies au sujet de la prophylaxie et du traitement de la lèpre.** -*Ann. de Méd. et de Pharm. Colon.* 1924. Jan.-Feb.-Mar.-Apr. Vol. 22. No. 1. pp. 121–133.

Attention is called to the good results of the new treatment of leprosy obtained in several of the French Colonies. It has led to an increase in the number of lepers coming to dispensaries for advice, and

has permitted early cases, with little or no infection, to be treated either as out-patients with domiciliary care and registration, or in special wards in hospitals. Particular care should be taken to prevent susceptible children coming into contact with lepers. The ethyl esters can be made from the oil of *Hydnocarpus anthelmintica* of China as well as from true chaulmoogra oil. Medical Research Institutes should have sections for the study of leprosy treatment. Cases should be classified as (1) Closed cases not giving off lepra bacilli and not contagious, to be treated in out-patient dispensaries, or if living too far away in hospitals; (2) open and contagious, to be isolated until the lesions are healed; and (3) mutilated and infirm cases requiring to be placed in asylums. The French Colonies, in a native population of 56 millions, have 80,000 to 100,000 lepers, making the disease an important problem, but with our present knowledge it is not rash to hope that if the campaign is carried out with the desired vigour, within ten years the amount of leprosy infection will be so greatly reduced that the plague may be virtually vanquished.

L. R.

Puxeddu (E.). **La velocita di sedimentazione degli eritrociti nella lepra.**—*Riforma Med.* 1924. June 2. Vol. 40. No. 22. pp. 507–509. [8 refs.]

The velocity of sedimentation (V.S.) of red cells has been suggested as a means of distinguishing gastric carcinoma from simple ulcer, the rate being rapid in the former and about normal in the latter. The rate is increased also in malaria, tuberculosis and syphilis. The author has applied a similar test to leprosy. The method preferred is that of Linzenmeyer, the blood being received into a tube containing the anticoagulant, sodium citrate, potassium oxalate, or sodium fluoride, and the time being noted for the corpuscles to fall to a fixed point marked on the tube. In three cases of leprosy the sedimentation time varied between 60 and 90 minutes, the normal being over 7 hours. In leprosy complicated with malaria this period was still further reduced to between 50 and 80 minutes. By using the red cells of the patients and plasma from normal subjects, and *vice versa*, he showed that the increased rapidity is mainly due to the plasma. The cells of the leprous patients sedimented in normal plasma in 4 hours or a little over, whereas normal cells in the plasma of leprous patients sedimented in 70–90 minutes.

H. Harold Scott.

Valverde (Belmiro). **Transmissibilidade da lepra.**—*Brazil-Medico.* 1924. Apr. 26. Year 38. Vol. 1. No. 17. pp. 233–236. [3 refs.]

——. **Contribuição para o estudo do contagio e da transmissibilidade da lepra.**—*Rev. Med.-Cirurg. do Brazil.* 1924. July. Vol. 32. No. 7. pp. 355–363. [3 refs.]

In these papers the author, mainly by discussion of the case of leprosy in a lad of 16 years who had never resided out of Paris (reported by Professor Jeanselme to the Academy of Medicine in December 1923), controverts the statement attributed to Lutz that this disease is conveyed only by mosquitoes, *Culex* and *Stegomyia*.

H. Harold Scott.

PLAGUE.

EGYPT (Ministry of the Interior). Department of Public Health. Reports and Notes of the Public Health Laboratories, Cairo. No. 5. **Plague Report.** [PETRIE (G. F.) & TODD (Ronald E.)]. — 114 pp. With 5 maps & 3 charts. 1923. Cairo: Govt. Press. [Price P.T. 20.]

This belated Report refers to investigations on plague in Upper Egypt between 1911 and 1913. It deals with the history of the disease before and from 1798 onward, with epidemiology, newly found rodent hosts and with fleas. But that which was new in 1913 has received full notice since the Great War. Many fleas can convey the infection, and so far as we know all rodents are susceptible to plague.

Nevertheless it has been suggested that certain portions of this Report are worthy of detailed notice. Those who wish to "look before and after" will find a helpful list of references on page 545, Vol. 19, of this *Bulletin*. After some prefatory remarks we come to a statement concerning the re-introduction of plague into Egypt in 1899. Previous records are dealt with in three stages: (1) Period ending in 1798, the year of the landing in Egypt of Napoleon's Expeditionary Force. (Prior to the seventh century records are scanty and of little value.) From the seventh to the fifteenth centuries plague epidemics were described by Arabic scholars whose manuscripts were examined by KREMER and abstracted in his monograph "On the Great Epidemics of the Orient collated from Arabic Sources." The epidemic of 1581 was described by Prosper ALPINUS, physician to the Embassy in Cairo. Other authors are mentioned. (2) The period from 1798 to 1899: — The first really systematic investigations into plague were made by French and Russian Commissions which worked, at intervals, between the years 1828 and 1843. Plague disappeared in 1844 and a free interval of 50 years followed. Then plague broke out in India, starting an Oriental pandemic and supplying materials for research to a number of Commissions sent from the chief countries of Europe. (3) Recent History of Plague in Egypt 1899–1911:—In the early part of 1897, two years before plague reappeared in Egypt, the Government sent a Commission to Bombay to study the disease. In April 1899 plague broke out in Alexandria. The exact mode of introduction is unknown, but it was part of the extension of the pandemic from Hong Kong 1894 and India 1896.

Of the fleas taken from rats and other rodents, *X. cheopis* gave 90–100 per cent. of those taken from *R. rattus*, *R. norvegicus*, Acomys and Arvicanthis trapped in houses. The first three when taken from feluccas in the cool season harboured *Leptopsylla musculi* in addition to *cheopis*. It is recorded that experiments showed the futility of using flea-killing agents to rid plague houses of fleas. The compilers state that they cannot imagine conditions more favourable to the spread of bubonic plague than those existing in Kôm Ombo:—"Back to back mud houses in a continuous row, ideal for facilitating intercommunication of rat colonies, dispersion of epizootic plague and transference of infected rat fleas to the human occupants." The compilers consider that among the climatic factors associated with plague the diurnal temperature variations deserve attention and that the gradually increasing delay in onset of plague from south to north is correlated with the seasonal variations in the climate throughout the country. It is an axiom that the spread of plague is directly related to the means of

communication by rail, road or river. Examples of spread of plague are given (pp. 32-39). In Egypt two types of pneumonic plague occurred, resembling those found elsewhere: (1) mixed, (2) pure pneumonic foci; the latter may originate as primary in the lungs, or may be contracted by infection from a bubonic patient, with secondary pneumonia, removed from some other locality and without any necessary relation to plague among rodents. It is probable that houses, after removal of pneumonic cases, are harmless, apart from gross infection in the form of collections of sputum, since the plague bacillus does not thrive as a saprophyte. The writers complain that popular ignorance was the chief obstacle to removing and preventing plague in Egypt. The Bibliographical References at the end of each section will be found interesting and useful.

J. H. Tull Walsh.

Liston (W. Glen). **The Milroy Lectures, 1924, on the Plague.**—*Brit. Med. Jl.* 1924. May 24, 31 & June 7. pp. 900–903; 950–954; 997–1001. [8 refs.]

These three lectures are worth reading, full of interesting matter and well written. They show vast research into the history of plague and they give results of the lecturer's own investigations. They do not, however, contain anything new, anything which has not been noticed in this *Bulletin* during recent years.

J. H. T. W.

Thiroux. **La marche récente de la peste à Madagascar.**—*Bull. Office Internat. d'Hyg. Publique.* 1924. May. Vol. 16. No. 5. pp. 589–591.

Except for the year 1924 this note provides little that has not been noticed in the *Bulletin* (Vols. 19, 20, 21).

After a fairly quiet period plague reappeared in January 1924, not only in Antananarivo but also in the province. In the town there were:—*Bubonic plague* 5 cases, 3 deaths; *Septicaemic* 22 cases, all died; *Pneumonic* 22 cases, 22 deaths. In Antananarivo Province the figures were:—*Bubonic plague* 231 cases, 183 deaths. *Septicaemic* 365 cases, all died. *Pneumonic* 67 cases, 67 deaths. Nothing is said about the treatment of these cases; but see Vol. 19, p. 370. [See also Vol. 19, p. 730 (Colignon).]

J. H. T. W.

Colombani. **La peste pneumonique au Maroc.**—*Bull. Office Internat. d'Hyg. Publique.* 1924. May. Vol. 16. No. 5. pp. 572–580. [9 refs.]

Plague is endemic in Morocco and epidemics are always occurring. "The picture of pneumonic plague in Morocco differs little in its general outlines from that seen in other epidemics." Dr. Nain's vivid description of symptomatology is quoted:—"Onset sudden, with rigors and fever with immediate high temperature; intense headache and general pains. The patient cannot stand and physical and mental powers are abolished. He is as one struck down and falls to rise no more." Plague serum has been used—100 to 120 cc. daily—but with

little success. The author writes that for 1921–1922 the total number of cases was 69 with only one recovery. [Might we suggest larger doses of anti-plague serum ?]

J. H. T. W.

Heggs (T. Barrett). **Pneumonic Plague in Iraq.** –*Trans. Roy. Soc. Trop. Med. & Hyg.* 1924. Mar. 20 & May 15. Vol. 18. Nos. 1 & 2. pp. 45–49.

The 1923 Outbreak :—On February 12, 1923, an Arab Sanitary Inspector of Kazimain reported that an acute fatal illness was occurring among the Bani Temim, whose tents were north-west of the city towards the Euphrates. On the 11th four bodies had been brought for burial at Kazimain. The disease had existed five days and all the cases were fatal. The Inspector suggested cholera, but when rectal swabs were examined no cholera vibrios were found. On the 15th the headquarters of the tribe were visited and one patient seen, suffering from fever, headache, dyspnoea, coughing of blood and severe toxaemia, with chest signs of universal broncho-pneumonia. The outbreak had originated on the grazing grounds, 30 miles from headquarters. From January 1st to February 17th there had been 25 deaths. The case seen at Agarguf had been taken, when ill, to these headquarters to see his family. The Civil Surgeon, with an inoculating party, at once toured the area on horseback, visiting and inoculating the various tribes. He discovered that the infection was brought by a man who, early in January, returned to camp from a visit to Baghdad. This man, two days after his return, showed a left axillary bubo, high fever with cough and blood-stained sputum ; dying on the seventh day. His father, mother and sister died with the same symptoms, but no bubo. Altogether about 50 deaths occurred and only two persons were known to have recovered. The outbreak was confined to the Bani Temim tribe.

The 1924 Outbreak.—The story is much the same : infection brought from Baghdad to the Jaboor tribe in a camp of 200 tents and about 1,800 people, 30 cases with 29 deaths, nearly all pure pneumonic plague, a few bubonic only, of which one recovered. The fatal cases of pneumonia, which occurred in the house in Baghdad from which the first case of recognized plague in the 1924 outbreak was removed to the El Jaboor tribe, were probably cases of primary pneumonic plague. It has to be recognized that cases of primary pneumonic plague may easily be missed [*cf.* this *Bulletin*, Vol. 19, pp. 542–543.] In the outbreaks of plague (1,850 cases) in Baghdad City from 1918 to 1923 not one case of primary pneumonic plague was notified. Are they being missed ?

J. H. T. W.

Jitta (N. M. Josephus). **Remarques sur la peste dans les Indes Néerlandaises.**—*Bull. Office Internat. d'Hyg. Publique.* 1924. May. Vol. 16. No. 5. pp. 563–565.

A general and statistical account of plague since its introduction into Soerabaja from India in 1911. From 2,155 victims in 1911 the disease death rate rose to 15,756 in 1914. The work of the Sanitary Service reduced the victims to 421 in 1917, but in the following years to 1922 there was an increase in the number of deaths (1922—10,936) ascribed to a spread of pneumonic plague.

J. H. T. W.

Otten (L.). **The Plague in Java (1911–1923).**—*Meded. Burgerlijk. Geneesk. Dienst. in Nederl.-Indië.* 1924. Pt. 2. pp. 115–248. With 2 maps, 6 charts & 18 figs. [10 refs.]

This official report, compiled by the "Head of the Plague Prevention Service," fills Part 2 of the journal. It brings together and expands much that has been previously noticed:—See this *Bulletin*, Vol. 21, p. 440 (Otten); Vol. 20, p. 741 (Van Steenis, Otten, Salm).

J. H. T. W.

Leger (Marcel) & Baury (A.). **Porteurs sains de bacilles pesteux.**—*C. R. Acad. Sci.* 1922. Oct. 23. Vol. 175. pp. 734–736.

Observations recently made in Senegal seem to show that in relation to endemic conditions of plague man must be considered as a reserve for the virus in addition to rats. In Dakar, natives dwelling in houses where a case of plague has occurred are taken to an isolation hospital. They are isolated for five days while the houses and their contents are disinfected. It therefore occurred to the authors to consider whether persons in contact with plague cases might be carriers of plague bacilli. By the kindness of M. Bergonier and Dr. Heckenroth the authors were able, on September 6th, to examine thirty natives already detained during three days. Ten of these, taken at hazard, were examined. They appeared in good health. All of them had enlarged inguinal glands, which is, more or less, the rule with African natives; but these glands were not very large, nor were they inflamed or tender. From all ten, smears of gland juice were taken. In three of the ten—Yara Sangare, Sidi Konate and Djan Mande, from three different parts of Dakar—they were surprised to find cocco-bacilli, bi-polar, Gram negative and resembling plague bacilli. Yara Sangare and Sidi Konate were taken to the Institute for Biology. Fresh punctures were made and the extracted fluid plus physiological serum was injected into rats: 2 *M. decumanus* and 2 *M. rattus*. One of the former appeared ill on the fourth day and very ill on September 15th, when it was killed. In smears from its spleen bacilli were found similar to those taken from Sangare. From this *M. decumanus* a *Myoxus murinus* and a *M. decumanus* were inoculated. The former died in eight days, the latter in eleven. Similar bacilli were found in both. Blood from the heart of the rat No. 123, killed September 15th, gave, on gelose, a pure culture of a cocco-bacillus resembling *B. pestis*. A 48-hour sub-culture was inoculated into the peritoneum of a *M. musculus*, a *Myoxus murinus*, a *M. decumanus* and a guineapig, the doses being $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{4}$ and $\frac{1}{2}$ cc. respectively. The two former died in 20 hours, the grey rat in 3 days and the guineapig in 26 hours. Numerous plague bacilli were found in their organs. The blood from rat No. 123 was also sown on bouillon covered with oil; on gelatin, potato and on gelose to which lactose, galactose, mannite, laevulose or glucose was added. *Bouillon*, culture in stalactites—*Gelatin* not liquefied. *Potato* very thin growth. The two *M. rattus* inoculated in the peritoneum from Sidi Konate, 11th September, were killed—very ill—on 22nd September. Bacilli like those of Yersin were found in the organs.

Thus it is possible that healthy carriers may escape notice and supervision, and their importance in maintaining endemic plague and in spreading the disease cannot be neglected.

J. H. T. W.

Wu Lien-Teh [G. L. Tuck]. **A Further Note on Natural and Experimental Plague in Tarbagans.**—*Jl. of Hyg.* 1924. Mar. Vol. 22. No. 3. pp. 329–334. [10 refs.]

The author describes an epizootic of plague reported from Transbaikalia in the spring of 1923. He went with Dr. Pollitzer and Dr. Kwan to Soktui on June 10th and was convinced that the tarbagans in the district were suffering from plague. They were aided by Dr. Sukneff, head of the Russian Plague Department, who showed them his specimens and gave them a tarbagan to dissect.

The post mortem findings in this animal were :—

"Large superficial bubo on left side of neck ; salivary glands oedematous and congested ; cervical glands on left side much enlarged, showing caseous and purulent matter on section. Glands on right side of neck swollen but not purulent. Spleen enlarged and soft. Liver swollen and congested. Some clear liquid in pericardial sac. Both lungs showed congested areas, especially the right lung, almost the whole lower lobe of which was affected. *B. pestis* present in smears of all organs. Cultures and inoculation experiments on guineapigs gave positive results for plague."

The morbid conditions in other tarbagans suffering from natural plague are given in a table. All tests positive.

The experimental work is recorded in detail and the conveyance to man through *Ceratophyllus silantiewi* is discussed. [*v.* Bacot, this *Bulletin*, Vol. 16, p. 45. See also Vol. 19, p. 372 (Wu Lien Teh).]

J. H. T. W.

Clemow (F. G.). **Plague and the Tarabagan.** [Correspondence.]—*Lancet.* 1924. Sept. 6. p. 526.

Dr. Clemow complains that Dr. Wu Lien-Teh has not given credit to Russians and others who many years ago (1881, 1888, 1911) discovered and recorded the connexion between the tarabagan and plague infection.

J. H. T. W.

Sandilands (J. E.) ; Heggs (T. B.). **The Serum Treatment of Plague.** [Correspondence.]—*Jl. Trop. Med. & Hyg.* 1924. Apr. 1. Vol. 27. No. 7. pp. 83–84.

The first letter, from Dr. Sandilands, Health Officer, Bombay, refers to a communication from Dr. Heggs (this *Bulletin*, *ante*, p. 441) in favour of anti-plague serum. We give Dr. Heggs' figures as quoted by Dr. Sandilands :—

	Day of Disease on Admission.		
	1 to 3.	1 to 4.	5 to 7.
Number of cases admitted ...	12	26	47
Number of deaths	2	6	23
Case mortality per cent. ...	17	23	49

[This table emphasizes a well-known and generally acknowledged fact that the earlier plague serum is injected the greater will be the benefit. Reference to the index of volumes of this *Bulletin* for the last four years will supply instances of the intravenous injection of anti-plague serum and of its great value in treating plague.]

Dr. Sandilands admits the value of the results but offers two objections :—" One is the statistical objection that the sample is too small, and the other that the low fatality among early cases may have been solely due to early general treatment in hospital." Dr. Heggs apparently implied that the virulence of the plague in Baghdad in 1923 was as great as in Bombay in 1905–1908, and is thought to suggest that the difference in the death-rate (30 per cent. and 64 per cent.) was due to the treatment of Baghdad cases with serum. Dr. Sandilands prefers to deal with more modern figures for comparison :—" The following statement shows the percentage fatality of plague in the Baghdad Isolation Hospital in the years 1920-21 with general treatment alone, and in the years 1922–23 when serum was administered.

	Cases.	Deaths.	Fatality per cent.
1919	214	67	31
1920	65	22	34
,, ...	*(60)	(17)	(30)
1921	21	12	57
1922	126	35	28
1923	127	46	36
,, ...	*(104)	(23)	(22)

* (Cases remaining after the deduction of those that were moribund on admission.)

The rest of this letter does not affect Dr. Heggs' reply, which may be in part given briefly :—" Dr. Sandilands has compared . . . . . mortality statistics which are not truly comparable to disprove something which has not been claimed. I made no claim to statistical proof because the required data were not available. . . . . In 1923 by using *the intravenous route in very toxic cases and larger doses* [italics ours, Sect. Ed.] we obtained some remarkable individual results. The profession in the city [Dr. Heggs is Health Officer of Baghdad] followed our hospital procedure with good results, so that this treatment now holds the confidence of the profession here."

J. H. T. W.

i. Stocker (C. J.) & Graham (G. F.). **Preliminary Notes on the Use of a Sensitised Anti-Plague Vaccine.**—*Indian Med. Gaz.* 1924. Mar. Vol. 59. No. 3. pp. 121–125. With 13 charts.

ii. Stocker (C. J.). **Sensitized Anti-Plague Vaccine.** [Correspondence.] —*Ibid.* July. No. 7. pp. 371–372.

i. The authors are not dealing with prophylactic vaccination, but with treatment of bubonic plague with a sensitized vaccine. The sensitizing serum was taken from a sheep showing agglutinins after about four weeks. A thick emulsion of plague bacilli is made in a known volume of normal saline. This is counted and placed in the centrifuge for some time. The supernatant fluid is poured off and the sensitizing serum added. Sterilization is carried out at 60°C. for half an hour. In the majority of cases graduated doses of 10, 20 and 50 million were given on successive days, but it is recognized that this was too timid. The initial dose for an adult should be 50 million.

Results.—Only the Mardan epidemic is dealt with :—

(*a*) Of those, not prophylactically inoculated, who were treated with the vaccine, 5 out of 17 died=29·4 per cent.

(*b*) Of those, not prophylactically inoculated, who *were not* treated with the vaccine 11 died out of 18=61·1 per cent.

(*c*) Of those who *were* prophylactically inoculated and *were* treated with the vaccine 1 died out of 12=8·3 per cent.

(*d*) Figures taken from a textbook showing that mortality among the inoculated (not treated with any vaccine) was 12·5 per cent.

Illustrative cases are given.

ii. Refers to a detail in manufacture of the vaccine.

"In the first batch of vaccine used the vaccine was not heated after sensitization. And the first batch was by far the most successful."

It has been found that pigeons are capable of producing very high titre serums. These serums have not yet been tried for sensitizing.

J. H. T. W.

PRATT-JOHNSON (J.). **Plague : Combined Vaccine and Serum Therapy.** *S. African Med. Rec.* 1924. Apr. 26. Vol. 22. No. 8. pp. 170–174. [7 refs.]

The author points out that the plague bacillus owes its deadly effects to its power of rapid multiplication and invasion of the tissues. Vaccine inoculations stimulate the defensive mechanism of the patient, and thus serve to limit the growth and invasive power of the bacillus. To overcome the associated toxaemia large doses of serum given intravenously are indicated. The administration of both serum and vaccine separately has, therefore, much to recommend it from a consideration of the etiology of this disease, and from experience gained in treatment of infections of a similar type by this method. The following scheme is suggested :—

	Serum.		*Sensitized Vaccine.*
First Day ...	100·0 cc. intravenously.	...	10 million subcutaneously.
Second Day ...	60·0 to 80·0 cc. intravenously. 20·0 cc. subcutaneously.	...	25 million subcutaneously.
Third Day ...	40·0 cc. intravenously. 20·0 cc. subcutaneously.	...	50 million subcutaneously.

J. H. T. W.

MANSOOR (R.). **The Administration of Plague Vaccine.** [Correspondence.]—*Brit. Med. Jl.* 1924. July 12. p. 83.

The writer records certain cases seen by him in India which showed severe local and general reaction after one inoculation of 4·0 cc. In April he was detailed to inoculate the personnel in the R.A.F., Indian Hospital, in Baghdad.

"I divided the people to be inoculated into three groups . . . irrespective of weight, age or physique.

"Group I was given the full dose at one sitting.

"Group II was given the initial dose of 2 c.cm., and the remaining 2 c.cm. six days later.

"Group III was given the initial dose of only 1 c.cm., followed by the second dose of the remaining 3 c.cm. six days later. This group included nursing sisters and a patient to whom I administered the initial dose immediately after opening an abscess in the axilla; his temperature at that time was 102°.

"The results were as follows:—

"Group I.—More than 80 per cent. developed severe reaction, both local and general, the temperature ranging from 101° to 103°. . . .

"Group II.—Only about 10 per cent. had slight fever. The local reaction was moderate.

"Group III.—Except just a little tenderness and a small zone of hyperaemia at the site of inoculation, there was no local reaction. None of them had the slightest general reaction. . . ."

J. H. T. W.

Patterson (J. W.). **The Administration of Plague Vaccine.** [Correspondence.]—*Brit. Med. Jl.* 1924. Aug. 9. p. 252.

The writer records some results of anti-plague vaccination at Basra in 1919. Four thousand or more natives were inoculated at dispensaries established for the purpose. As few women attended, a dispensary was opened for purdah women, staffed by two nursing sisters, where about 1,200 women were inoculated. The full dose of vaccine was given at one attendance as it was highly improbable that the natives would return for a second injection.

"I have therefore no knowledge of the severity of the reaction following inoculation in these people, but among the European, Indian, and Arab staff it was seldom that the reaction could be described as severe, few, in fact, having to cease work. . . .

"The result of this work left no doubt in my mind of the value of plague vaccine as a prophylactic measure. . . . A notable feature was the comparative immunity of inoculated individuals who continued to live in infected dwellings and the tendency of uninoculated members of the same houses to contract the disease."

J. H. T. W.

Stevenson (W. D. H.) & Kapadia (R. J.). **Experiments on the Toxicity and Immunizing Value of Haffkine's Anti-Plague Vaccine.**—*Indian Jl. Med. Res.* 1924. July. Vol. 12. No. 1. pp. 199–211. With 2 charts. [5 refs.]

As a virulent strain of plague is essential for the preparation of the vaccine the bacilli are initially obtained from a septicaemic human case of plague. A pure culture is obtained which on cutaneous infection of a guineapig produces death within 5 days. Large flasks, containing a litre of faintly alkaline broth, and shallow to allow aeration, are inoculated. These are incubated at room temperature in Bombay (average mean varying from 72°F. in winter to 85°F. in summer), in the dark, from one to three months or longer. After incubation the broth flasks containing growth of bacilli are heated from 56°C. to 58°C. for half an hour, killing the bacilli. Formerly Mr. Haffkine used to kill the germs at 70°C.; but it was found in so doing that much of the immunizing value of the vaccine was destroyed. After cooling, carbolic acid is added to 0·5 per cent. strength.

The charts show that inoculation not only lessens the percentage of deaths, but that in those inoculated rats which develop plague the date of death is deferred. Most controls died between the 4th and 6th day, while most inoculated rats did not die until the 8th to 12th day.

The immunity afforded to rats varies according to the dose of vaccine. In Table No. II the death rate diminishes from 87 per cent. in non-inoculated rats to 15·4 per cent. in rats immunized with 2·0 cc. of vaccine, while in Table III, where the rats were inoculated with only 0.25 cc., the difference of immunity at most between the control rats and the rats immunized with the most potent vaccine used was 18 per cent.

The immunity in rats inoculated with potent vaccine is, of course, dependent not only on the strength of the vaccine as well as the dose given, but also on the number of virulent living plague bacilli administered as a test, and their virulence.

The toxicity of the vaccine for rats varies with two factors :—(1) the length of time the vaccine has been incubated ; (2) the length of time the vaccine has been stored after sterilization and carbolization (in vacuum, ampoules sealed by heating the glass).

With regard to the influence of these two factors, Tables I to VII seem to show that vaccines incubated from 6 weeks to 2 months are very much more potent than those incubated more than 3 months. The length of storage does not diminish the immunizing value at nearly the same rate as it does the toxicity of the vaccines. Vaccines over 2 years old were proved to possess some protective value and vaccines of 1 year 2 months had strong protective power.

It would appear to be advisable to use vaccines incubated from 6 weeks to 2 months ; also to store them after sterilization for some months. One can then rely on a vaccine of high immunizing value and low toxicity.

J. H. T. W.

Zeiss (Heinz). **Ueber die Anwendung von Yatren auf Pestbakterien.** [The Effect of Yatren on the Plague Bacillus.]—*Rev. Microbiol. et Épidémiol.* Saratov. 1923. Vol. 2. Nos. 3–4. pp. 74–76.

The presence of 30 per cent. iodine in Yatren (iodo-oxy-chinolin-sulphonic-acid) suggested to the author that the drug might be useful as an antiseptic. His investigations go to prove :—That below 5 per cent Yatren does not destroy *B. pestis* ; but that a 5 per cent. fluid is a practically useful disinfectant. The mixture of 5 per cent. Yatren with *B. pestis* culture caused a lethal dose to become, after about 24 hours, slightly reduced in virulence.

Therapeutic experiments are in progress.

J. H. T. W.

Golov (D. A.) & Ilovaisky (S. A.). **Influence de trypanosomiase sur le cours de la peste expérimentale chez les spermophiles.**—*Rev. Microbiol. et Épidémiol.* Saratov. 1924. Vol. 3. No. 1–2. In Russian pp. 75–80. 2 refs. French summary pp. 107–108.

The authors based their experimental work on the observations of M. Koltzov on the relations between natural trypanosomiasis and plague in spermophilus, on the one hand, and the frequent occurrence of buboes and enlarged lymphatic glands in the same rodents taken in non-plague regions.

The spermophiles were inoculated with the trypanosome of Surra from camels, and as soon as they developed trypanosomiasis they were infected with plague by inoculation.

Only about one-third of the animals used became infected with trypanosomiasis [*T. evansi*], and animals inoculated with blood from these victims were not affected. The progress of infection depends on the age of the animal; it is rapid in young ones, slow in the old. Inoculation of these infected spermophiles with a minimum dose of plague caused death in 6 out of 8 cases.

From their experiments the authors draw the following conclusions:—

(1) To avoid errors or unlooked for results, when using spermophilus for experiments with plague, it is necessary, as a preliminary measure, to examine their blood for haemoparasites.

(2) It is possible that trypanosomiasis in spermophilus (especially young ones) is favourable to the appearance of a plague epizootic.

J. H. T. W.

Morales Villazon (Nestor). **Estudio de un bacteriófage eficaz para el bacilo de la peste.**—*Rev. Asoc. Méd. Argentina.* 1923. Sept. [Summarized in *Rev. Española Med. y Cirug.* Barcelona. 1924. June. Vol. 7. No. 72. pp. 335–336.]

In cultures from infected rats the author observed many spots showing lysis. From these cultures three white rats and three guineapigs were inoculated. Two of the rats inoculated with bacteriophage and emulsion of *B. pestis* died without showing any bacilli at the autopsy; in the third rat, which did not receive any of the bacteriophage culture, bacilli were found. Of the three guineapigs, two were inoculated with both bacteriophage and emulsion, the third with emulsion of *B. pestis* only. One of the two guineapigs remained well and lived; the second died, but only one single bacillus could be found. In the body of the third the bacilli were numerous. [See *ante*, p. 70 (Villazon).]

J. H. T. W.

i. King (W. G.). **The Hindu and Plague.** [Correspondence.]—*Brit. Med. Jl.* 1924. June 14. p. 1071.

ii. Cherefeddin (Osman). **Lungenpest und der prophylaktische Wert des Pestserums.** [Pneumonic Plague and the Prophylactic Value of Anti-Plague Serum.]—*Deut. Med. Woch.* 1924. June 20. Vol. 50. No. 25. pp. 842–843.

iii. Pal (R. D.). **Intravenous Iodine Injections in Plague.**—*Indian Med. Gaz.* 1924. July. Vol. 59. No. 7. p. 348.

i. A more or less academic discussion as to "the salutary influence of the tenets of the *Bhagavata Purana* on acceptance in India of modern plague measures" [referred to in the Milroy Lectures; see above]. Colonel King writes:—"In the [Devi] *Bhagavata Purana* (whence a quotation would be of peculiar value to Hindus) I was assured that after careful search throughout the work no such reference to plague could be found."

ii. As the result of 4½ years' observation of plague in Constantinople the author concludes that anti-plague serum is not only valuable for treatment but is a prophylactic agent of great worth.

iii. Refers to unsatisfactory results after such treatment; *v.* this *Bulletin*, Vol. 17, p. 395 (Vassallo and another reference).

J. H. T. W.

CHOLERA.

Tomb (J. W.). **A Further Note on the Efficacy of the Essential Oils in the Prevention and Treatment of Cholera.**— *Indian Med. Gaz.* 1924. May. Vol. 59. No. 5. pp. 233–235.

The "former article" to which the author refers was fully noticed in this *Bulletin*, Vol. 20, p. 736. The prescription used in 1923 was the same as that given in the original record, and the results are said to be, as before, satisfactory.

"It should be pointed out that in some case two or three doses of the mixture will . . . stop all vomiting and purging, but . . . experience in the Mining Settlement has shewn that the mixture should not be discontinued at this point, not less than eight doses being apparently necessary in every case if recovery is to be made certain of . . . . .

"The exceptional value of the essential oils mixture . . . amongst collections of coolies, or in villages remote from ordinary medical aid, will at once be apparent, since containing, as it does, no opiates or other dangerous drugs, it may safely be placed in the hands of any intelligent coolie-sardar or village headman, who can administer it according to directions either to prevent or to abort the disease as circumstances demand."

J. H. Tull Walsh.

Palmer (F. J.). **The Treatment of Cholera by Cresol.**— *Indian Med. Gaz.* 1924. Aug. Vol. 59. No. 8. pp. 381–385.

This method of treatment was first begun during the hot weather of 1923, and continued during the present year at Cachar, Assam.

"During the War I had a certain amount of experience of cholera whilst in command of a General Hospital in Mesopotamia, and was struck by the apparent inadequacy of transfusion of hypertonic saline in many cases. . . .

"I admit that the first effect of transfusion is extremely gratifying as a rule. To watch colour and pulse return to the cold and collapsed patient inspires a feeling of hope, but, alas, in my experience, the improvement is often fallacious. Collapse returns, to be again combated by saline, and followed by a shorter transitory improvement, and hope is again mocked until the end comes. . . .

"Again, the first person to see a case of cholera in a labour force or lines, and often the only one, is an Indian of the compounder or sub-assistant-surgeon class, and it is highly desirable that some treatment of easy application should be immediately available, as every moment is precious."

In an outbreak of cholera in the hot weather of 1923 there were seven cases, all treated with one minim of cresol in an ounce of water every quarter of an hour. Six recovered and one died. Those that recovered had only the cresol treatment. The case that died was also transfused with hypertonic saline. Other instances of success with cresol are given and after early trials the dose of cresol was increased:—In its present form the treatment is one to four minims of cresol, according to age and size, dissolved in a similar number of ounces of tepid water. The dose is repeated every quarter of an hour for a couple of hours and then the interval between the doses is increased to half an hour, and later to an hour, two hours, etc., whilst at the same time the dose of cresol is slightly reduced.

Cresol is a mixture of meta-, para-, and ortho-cresols, but it is probable that various preparations contain varying amounts of the three constituents. These various preparations masquerade under different

names and are emulsified in different ways. Some of these are unsuited for internal use, and paracresol is said to be a powerful poison. Cresol for internal use should be thoroughly miscible with cold water. No globules, however minute, of tarry fluid should remain in suspension, this being characteristic of the inferior brands. Preparations forming a thin watery, very slightly milky, fluid should not be used internally. These are generally of the crude carbolic type.

J. H. T. W.

Mukerji (S. K.). **A Case of Suppurative Metastatic Choroiditis after Cholera.**—*Calcutta Med. Jl.* 1924. Apr. Vol. 18. No. 10. pp. 708–709.

The patient: Hindu, male, aged 28, was attacked with cholera on a return journey from Benares. He was admitted into the Campbell Medical Hospital in a collapsed state. He remained in the hospital for two weeks and was treated with intravenous saline injections. Rigor and rise of temperature followed the last injection [composition of injection not given]. Some 5 days later he was discharged. On arriving at his home he felt some discomfort in the left eye and within 24 hours became completely blind. He then went to the out-patient department of the Belgatchia Hospital. He refused admission, and hot boric compresses with atropin and dionin, locally instilled, and a saline purge were prescribed. Forty-eight hours later he returned with agonizing pain on the left side of the head. There was increased oedema of the eyelids, high tension and the anterior chamber was full of purulent exudate. There was rise of temperature and a history of vomiting. The eye was, on incision, found full of pus. Evisceration, not enucleation, was performed. The patient made a good recovery.

J. H. T. W.

Korobkova (E.) & Zénine (A.). **Vaccination per os contre le choléra.** —*Rev. Microbiol. et Épidémiol.* Saratov. 1923. Vol. 2. Nos. 3–4. In Russian pp. 51–54. [1 ref.] French summary p. 104.

The authors used oral anti-cholera vaccines for 348 students in the Military College; 233 received a vaccine without bile; 115 the bile-vaccine. The former vaccine was prepared with vibrios from eight sources, sterilized at 56°C. for one and a half hours. The dose—50–75 thousand million microbes—was given to fasting pupils on three consecutive days. Before vaccination the blood of the recipients (except two, 1 : 10) showed no powers, agglutinant or bactericidal. On the contrary, the blood of the same individuals, taken 18 days after the last dose, showed the presence of antibodies, agglutinins and bacteriolysins. At the end of 37 days the agglutinins disappeared, the bacteriolysins remained. The vaccine did not cause any serious reaction. They could not find any difference in the development of antibodies in those receiving the ordinary vaccine and those who took the bile-vaccine, and after these experiments they do not consider sensitization of the intestine with bile necessary. However inconclusive these considerations may be with regard to immunity [? immune antibodies], nevertheless hypodermic inoculation is employed taking into consideration such similar data, shown in the statistics, of epidemics in the past.

J. H. T. W.

Maitra (G. C.) & Basu (J. B.). **A Short Note on the Method of successfully cultivating Cholera Vibrio from Cases of Clinical Cholera.** —*Calcutta Med. Jl.* 1924. July. Vol. 19. No. 1. pp. 1–10. [1 ref.]

"Our cases were mostly drawn from Calcutta and its suburbs, and included persons resident in the city as well as outsiders. During the time of examination they were practically in two stages of the disease, namely, the acute and the sub-acute. The classification . . . . was based on the presence or absence of bile in the stool—the presence of bile signifying the disappearance of the inflammatory conditions in the duodenum and hence sub-acute stage of the disease." The cases were examined microscopically and culturally and the value of two media was assessed after careful consideration of the results of both observations carried on side by side in each individual.

In 200 successful cultures from 200 samples obtained from about an equal number of acute and sub-acute cases, while ordinary agar medium was uniformly successful, McConkey agar failed in 80 per cent. Vibrios appeared on the agar plate and were isolated from samples which had not shown any vibrio in the film.

For cultivation of cholera vibrio, ordinary nutrient agar of pH 7·6 is a better medium than the McConkey agar.

J. H. T. W.

Meissner (Gertrud). **Ueber Bakteriophagen gegen Choleravibrionen.**— *Cent. f. Bakt.* 1 Abt. Orig. 1924. Jan. 14. Vol. 91. No. 3–4. pp. 149–154. With 1 text fig. [9 refs.]

The author inoculated guineapigs, intraperitoneally, with lethal doses of cholera vibrios mixed with a high titre cholera immune serum. After various intervals the peritoneal exudate was removed and inoculated into vibrio infected bouillon. After 24 hours' incubation at 37°C. the bouillon was filtered and from the filtrate further inoculations of cultures were carried out. Agar plates were also used. Vibrio bacteriophages were obtained from the bouillon and bacteriophage loculi were formed on the agar plates as shown in the text figure. Further, the author was able to recognize bacteriophage material in normal guineapigs.

J. H. T. W.

Flu (P. C.). **Over Cholerabacteriophagen.**—*Tijdschr. v. Vergelijkende Geneesk. enz.* Leyden. 1924. Apr. 26. Vol. 10. No. 2–3. pp. 196–207. [6 refs.] [English summary pp. 206–207.]

The author isolated an anti-cholera bacteriophage from a pure laboratory strain of cholera vibrios. This strain was taken, in 1915, from the stools of a cholera case in Java. The vibrios were grown on agar slopes and a 24 hour culture was suspended in saline solution (0·9 per cent.) or broth. The suspension was mixed with sufficient anhydric sulphate of soda to form a dry mass. This mass was ground in a mortar for half an hour and the fine powder suspended in 100·0 cc. broth, heated for one hour at 58°C. and divided into portions of 10·0 cc. in 10 bottles each containing 100·0 cc. of broth (pH 7·5). Each bottle was then infected with one loop full of cholera vibrios of a different strain to the ground one. After two or three days' incubation at 37°C. [sic] [Dutch "14 days"; in French abstract "one or two weeks"]

the liquid from each bottle was filtered through Chamberland bougies and the filtrates examined for bacteriophage against 10 strains of cholera vibrios. Of these 10 strains one was found affected by anti-cholera bacteriophage. The bacteriophage is very active and shows lysis in dilutions of 10·7; but has no action on the strain from which it was isolated.

J. H. T. W.

Hirsch (Julius). **Zur Biochemie des Vibrio cholerae. Quantitative Untersuchung des Nitratstoffwechsels.** [The Biochemistry of *Vibrio cholerae.* Quantitative Investigation of the Nitrate Reduction.]—*Ztschr. f. Hyg. u. Infektionskr.* 1924. May 28. Vol. 102. No. 3–4. pp. 503–516. With 3 text figs. [26 refs.]

In these experiments the gas-volumetric apparatus of W. Strecker was used; a diagram figure is given. (*Ber. d. Dtsch. Chem. Ges.* 51, 997, 1918). In peptone-water cultures of *V. cholerae* nitrate salts are reduced to nitrites, the quantities being similar. The commencement of the reduction process and the period of the reaction depend on the seed-vibrios and on their growth. Up to a nitrate-content of 0·3 per cent. the speed of the reaction increases with increasing concentration. Oxygen is necessary. The nitrate-reduction is a function of the living bacterial cells.

J. H. T. W.

Kollath (Werner) & Lubinski (Herbert). **Zur Differentialdiagnose zwischen Vibrionen und** *Bacillus faecalis alcaligenes.*—*Cent. f. Bakt.* 1 Abt. Orig. 1924. Apr. 30. Vol. 91. No. 7–8. pp. 455–459. [10 refs.]

The reason for undertaking these experiments is found in a paper by Stutzer wherein he stated that among 15 "cholera-like vibrios" isolated during an epidemic in Woronesh 14 produced alkali in the culture media and were placed in the "faecalis group." It is sufficient to say, as is shown by the work of Kollath and Lubinski, that *B. faecalis alcaligenes* does not agglutinate with anti-cholera serum nor is there any agglutination of *V. cholerae* with "faecalis-serum."

J. H. T. W.

Képinov (Léon). **Étude sur l'immunité non spécifique. Action immunisante des filtrats bactériens non spécifiques sur l'infection cholérique.**—*C. R. Soc. Biol.* 1924. July 4. Vol. 91. No. 23. pp. 244–246. [3 refs.]

The present note contains only results of experiments with cholera virus. Proteolytic microbes were chosen:—*B. prodigiosus* and *B. proteus*, the latter possessing greater proteolytic action than the former. As control and for comparison experiments were made at the same time with filtrates from cultures of *V. cholerae*. The filtrates were prepared according to Besredka's method [*ante* pp. 447–448]. The animals used were guineapigs weighing about 400 gm. The filtrates were injected under the skin (2·0 cc. for one lethal dose of *V. cholerae* and 4·0 cc. for two doses). At the end of 24–30 hours cholera virus was injected, sometimes into the jugular vein, sometimes into the abdominal cavity; the lethal dose being 1/10 of a 24 hour culture on gelose for

intravenous injection and 1 10 to 1 50 when injected into the peritoneal cavity. The guineapigs prepared with a specific filtrate from cultures of vibrios showed the most feeble resistance. Some were killed by one dose. None of the 5 controls could resist two lethal doses [*cf.* Besredka and Golovanoff *l.c. supra*]. The guineapigs protected with filtrate from *B. prodigiosus* (4·0 cc.) were most resistant; all bore one lethal dose; but 50 per cent. succumbed after two lethal doses. Guineapigs protected with *B. proteus* filtrate were still more resistant. They did not succumb either to one or two lethal doses and all the animals survived. The author concludes that:—"Vaccine action in regard to cholera infection is not only found in the filtrate from cholera cultures, but to a greater degree in filtrates of cultures of *B. prodigiosus* and especially of *B. proteus*." Neither injections of milk, nor of deuteralbumose possess any protective action against cholera virus [*cf.* Piccininni and Scaglione below].

J. H. T. W.

Scarpellini (Andrea). **Il vibrione del colera: modificazioni e mutazioni nell' ambiente esterno e negli organismi viventi.** [Changes and Mutations of the Cholera Vibrio in the Living Organism and Outside it.]—*Bol. d. Instituto Sieroterap. Milanese.* 1924. Feb. Vol. 3. No. 2. pp. 85–93. [1 ref.]

This paper contains detailed laboratory work on the agglutination reaction with sugars, production of indol, etc. Certain numbered strains (Abano) were used and those from cultures compared with others taken from inoculated guineapigs. Differences in virulence are noticed.

J. H. T. W.

i. Petrovanu (Guntza). **Recherches sur l'existence du principe lytique dans la péritonite cholérique expérimentale.**—*C. R. Soc. Biol.* 1924. Aug. 12. Vol. 91. No. 27. pp. 735–736. [1 ref.]

ii. ——. **Recherches sur la présence du principe lytique vis-à-vis du vibrion cholérique dans la paroi de l'intestin grêle.**—*Ibid.* pp. 754–756. [1 ref.]

iii. Popescu (C.). **Sur les propriétés antivibrioniennes des plaquettes du sang.**—*Ibid.* pp. 750–752. [2 refs.]

i. The lytic principle related to cholera vibrios had been found by M. Ciuca and the author in the filtrate from cholera stools; the reaction, feeble in all cases, did not affect vibrios taken from the patients; but was only visible with extraneous vibrios. The lytic action also affected certain races of *B. coli* and Shiga's bacillus. Using adult rabbits, the author concludes that peritoneal exudate collected at varying intervals has no lytic effect on vibrios either after a lethal or non-lethal dose of cholera toxin.

ii. Filtrates from washed and ground up small intestines of 4 kinds were used: (1) From normal rabbits; (2) from rabbits immunized against *V. cholerae* (Briceag strain, used for these experiments), and (3) with the "Pasteur" vibrios; (4) from rabbits which died after 24 hours from injections of cholera vibrios into the peritoneum.

The four filtrates produced no effect on the vibrios of the original culture. On vibrios taken from the blood etc., there was slight lytic action.

iii. The author states that blood platelets have a certain agglutinating effect on vibrios.

J. H. T. W.

Watanabe (Hotori), Okuda (Oro) & Akamatsu (Ohichi). **[On the Strains of Cholera Vibrios isolated from Cases in Osaka during the Epidemic in 1923.]**—*Tokyo Iji-shinshi* (*Tokyo Med. News*). 1924. Jan. No. 2351. [Summarized in *Japan Med. World.* 1924. Mar. 15. Vol. 4. No. 3. p. 70.]

The authors lay stress on the necessity of preparing polyvalent immune serum for the cholera vibrios because of the divergent immunological reactions with cholera vibrios, especially the agglutination tests. [*ante*, p. 450 (Yamaguchi and others).]

J. H. T. W.

Sanarelli (G.). **Patogenesi del colera (IXa Memoria). Il Colera sperimentale.**—*Ann. d' Igiene.* 1924. Apr. Vol. 34. No. 4. pp. 237–287. With 2 coloured plates. [25 refs.]

A long, detailed consideration of work already published and reviewed; see Sanarelli (G.), this *Bulletin*, Vol. 21, p. 72; Vol. 20. p 737.

J. H. T. W.

ENTERIC FEVERS IN THE TROPICS.

Cruickshank (J. A.). **A Note on the Value of Prophylactic Inoculation in the Prevention of Chronic Carriers of Typhoid and Paratyphoid Bacilli.**—*Indian Med. Gaz.* 1924. May. Vol. 59. No. 5. pp. 232–233. [1 ref.]

The author is Director of the Pasteur Institute of Southern India, Coonoor, and his work was based upon the fact that:—"It is the chronic carrier by whom these diseases are perpetuated . . . . . if the chronic carrier could be eliminated enteric and paratyphoid fevers would cease to exist."

The records of isolated carriers were examined and the author found that in his series the percentage of chronic carriers was much higher among the uninoculated than among the inoculated. Among 1,886 British soldiers convalescent from enteric fevers who passed through the author's hands at the Parel Enteric Depot, there were 3·2 per cent. chronic carriers among the uninoculated and 0·5 per cent. among the inoculated. Details of 12 undoubted chronic carriers are given in the following "table."

Inoculation State of Chronic Carriers.

B. paratyphosus A.

Uninoculated	2	
Inoculated with simple "T" vaccine	4	(1) 4 months before illness. (2) 18 " " " (3) 20 " " " (4) 22 " " "
Inoculated with "T.A.B." vaccine ..	2	(1) 10 " " " (2) 11 " " " (only received 1 dose).

B. typhosus.

Uninoculated	1	
Inoculated with "T.A.B."	2	(1) 14 months before illness. (2) 15 " " "

B. paratyphosus B.

Inoculated with "T.A.B."	1	9 months before illness.

Only 4 at most of these 12 carriers had been thoroughly and efficiently inoculated.

"Treatment of the enteric fevers by vaccines has never come into general use, although good results have been reported from time to time [see this *Bulletin*, 1916–1922 index], especially in American literature. I would offer the suggestion that these figures may be taken to indicate the advisability of again trying vaccine therapy in these diseases, at any rate in uninoculated subjects, with a view to still further preventing the manufacture of chronic carriers."

J. H. Tull Walsh.

i. Fukushima (Hisashi). **Antityphoid and Antiparatyphoid Vaccination in the Japanese Navy.**— *Far Eastern Assoc. Trop. Med. Trans. Fifth Biennial Congress, Singapore* 1923. pp. 725–728.

ii. Kasuga (Kenzo). **On the Effect of Antityphoid and Anti-paratyphoid Vaccination in the Japanese Army.**— *Ibid.* pp. 729–732. With 2 charts.

i. In the Japanese Navy antityphoid and antiparatyphoid vaccination has been compulsory for petty officers and men since May 15th, 1916. Both grades receive the "T.A.B." vaccine every year and recruits are inoculated, for the first time, within a month of their enrolment. For recruits the doses are 0·5 cc. and 1·0 cc. For those previously vaccinated there is, from the second year, only one injection of 0·5 cc.

The results have been striking. Since 1917 the annual number of cases and carriers has never exceeded 0·67 per 1,000 of the average strength. The usual precautions are taken to lessen the local and general reactions after vaccination. Violent post-vaccinal reaction is rarely met with. Still the unfortunate martyrs of vaccination since 1916 have numbered five, one case each in 1916, 1918, 1920 and two cases in 1922. This corresponds to one death in every 167,670 injections. None of these deaths occurred among recruits inoculated for the first time.

ii. It was in 1908, when a great many cases of typhoid occurred in the section of the Army stationed at Hokkaido, that prophylactic vaccination against typhoid was carried out, for the first time, in the Japanese Army. It has been recognized that the death rate among inoculated has decreased to about one-ninth of the rate before the War. But with regard to the non-inoculated there is no difference before the War and after it. The adoption of prophylactic vaccination against typhoid and paratyphoid has reduced in a marked degree the number of cases in the Japanese Army.

J. H. T. W.

Duncan (J. T.). **A "New" Salmonella from a Case of Enteric Fever.**— *Jl. of Hyg.* 1924. July 31. Vol. 22. No. 4. pp. 402–409. With 4 figs. [4 refs.]

The bacillus described was taken from the circulating blood of an Indian seaman admitted to the Royal Albert Dock Hospital under Dr. G. C. Low. The patient presented all the common clinical features of enteric fever, with two attacks of intestinal haemorrhage. Widal tests were negative with ordinary strains of typhoid and paratyphoid bacilli. A culture made on admission yielded a bacillus, referred to as the *Alphonso* strain, possessing morphologiaclly the general characters of the Salmonella group. Absorption tests with 11 types from the

National Collection of Type Cultures showed that only a Salmonella *Type* "G" serum was completely absorbed by *Alphonso* at a titre of 1/100. Details are given of the serum tests applied. They definitely established the identity of *Alphonso* as a Salmonella and apparently a strain of *Type* "G," which was isolated at the Lister Institute in 1917 from the mesenteric gland of a monkey but has not before been reported from man. It was the cause of a typical enteric fever. Such cases, in which serological tests with the recognized stock suspensions have failed, occur frequently, and failure of the ordinary "T.A.B." vaccine has also been noted. The author is of opinion that wider application of cultural methods for diagnosis, especially in the tropics, would undoubtedly add to the list of bacteria recorded as causative agents in enteric fever.

J. H. T. W.

Burgess (Edwin). **Some Living Aberrant Forms of** *Bacillus typhosus.*—*Ceylon Jl. Science.* (Section D. Med. Science.) 1924. June 4. Vol. 1. Pt. 1. pp. 33/40. With 2 plates. [7 refs.]

Variation among bacilli of the *Enterica* group is so well known that detailed notice is not necessary. These aberrants frequently return to type after culture for a year or so. See this *Bulletin*, Vol. 16, pp. 448/449, 450; Vol. 17, pp. 409/410 (Garrow).

J. H. T. W.

MISCELLANEOUS.

Ministry of Health. **Memorandum on Encephalitis Lethargica.**—12 pp. Memo. 45 Med. Revised. 1924. London: H.M. Stationery Office. [Price 1d. net.]

Encephalitis lethargica is here described with express disapproval of its misleading popular name, "sleepy sickness"—as an infectious disease of world-wide occurrence, most prevalent in winter and spring, attacking all ages - but with a preference for the early and middle periods of life —and both sexes almost equally, and having as one of its most characteristic manifestations a progressive lethargy due to a lesion in or about the nuclei of the third pair of cranial nerves. No causal parasite has been discovered, and although most workers everywhere have failed to transmit the disease to animals, a virus obtained from human cases has, in some few instances, provoked the characteristic lesions in monkeys and rabbits by inoculation. According to Levaditi the virus is identical with that of herpes, but since Flexner has obtained a virus identical with that of herpes from the cerebrospinal fluid of a nerve case that did *not* exhibit the signals of encephalitis lethargica, Levaditi's conclusion must for the present be received with some hesitation. Other workers have attributed the disease to a quite different virus—a virus (probably a minute protozoon) derived probably from the spontaneous encephalitis of rabbits; and the disease has also been assigned, but without sufficient proof, to various bacterial organisms. The malady, at any rate, is of low infectivity, and appears to be one of that group of maladies where the pathological agent is frequently present, but latent, in the human organism; and an attack may be regarded either as the breakdown of an established resistance, or as an independent infection with a specifically virulent strain of virus.

The course of the disease includes an unspecified term of incubation ; a prodromal period usually lasting 7 days, but occasionally extending to 2 or 3 weeks, during which lethargic somnolence, headache, and diplopia are suggestive symptoms that occur ; and an acute febrile stage (101°–102°F.) of marked asthenia, stupor (often alternating with nocturnal delirium), difficulties of speech, and twitchings of face and limbs. Transient skin eruptions —erythematous, petechial, papular, morbilliform, or scarlatiniform—occasionally occur early in the pyrexial stage. In a type of the disease having various definite localizations in the central nervous system early paralysis of accommodation, with diplopia, is very frequent, and progressive paralysis of the muscles supplied by the facial nerve, of the eye-ball, pharynx, tongue, etc., and even of the limbs, may occur. In the severest cases the patient lies like a log, perhaps cataleptic, and cannot be roused. More often he lies in a profound sleep, but can be wakened. Case mortality ranges between 20 and 50 per cent. Death occurs most frequently in the third week.

Mild or abortive—but infective—cases should be watched for ; the symptoms may be merely naso-pharyngeal catarrh, dryness of throat, stiffness of neck, and headache ; or slight lethargy, apathy, and headache ; or slight fever and transient eye-symptoms and facial paralysis ; " epidemic hiccup " even may be suggestive.

The more important sequelae are (1) mental, of all degrees of severity, usually in children or young adults ; (2) a condition—one of the gravest —much like, and perhaps identical with, paralysis agitans ; this also may occur in juveniles ; (3) excito-motor—muscle spasms or contractions, slowed movements ; (4) increased muscle tone, paralysis, various sensory symptoms, and curious respiratory spasms.

The first definite clinical and pathological study of this disease (13 cases at Vienna) was made by von Economo and von Wiesner in 1917. But scattered through the medical literature of the last four or five centuries are many records of cases and epidemics of somnific or comatose fevers associated with nerve-symptoms or paralysis, which possibly may correspond with the various types of encephalitis lethargica now recognized ; one such epidemic, at Tubingen, in 1712, is said to have been called " Schlafkrankheit." In quite recent days (1918), in England, a large number of cases of this disease were mistaken first for botulism and then for the cerebral form of acute poliomyelitis.

This interesting Memorandum also supplies information as to action to be taken by the M.O.H. It is indeed " good pennyworth."

A. A.

Smith (Lawrence Weld). **Epidemic Encephalitis (Encephalitis Lethargica). Report of an Outbreak occurring in the Philippine Islands, with Notes on the Pathological Findings.**—*Philippine Jl. Sci.* 1924. Jan. Vol. 24. No. 1. pp. 1–21. With 1 chart in text & 5 plates. [23 refs.]

This epidemic of encephalitis lethargica seems to have had no relation, simultaneous or successive, with influenza ; its spread was " as mysterious as that of anterior poliomyelitis or influenza itself." This report refers to the laboratory observations exclusive of bacteriology. The spinal fluid, tested by Fehling's solution, usually shows a slight increase of sugar. The blood may show a slight polynuclear leucocytosis. The gross pathological changes, which are slight and often negligible, consist mainly of general congestion of the viscera and central nervous system, with occasional punctate haemorrhages of corpora striata, medulla, or cervical cord.

The histological changes are perivascular infiltration of the central nervous system, occasional capillary haemorrhages, and rare degeneration of nerve-cells. In ten cases a characteristic skin lesion occurred, which passes through four stages—macular, papular, vesicular, and furfuraceous. The macules—dull, dusky-red and measles-like—begin on the face and neck, extend slowly over the trunk and arms, and then over the thighs. As they develop they become discrete and punctate retaining the dusky-red colour. The vesicles are minute (1 to 2 mm.), serous, and occasionally slightly umbilicated.

A. A.

Roegholt (M. N.). **Appendicitis in Indië.**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1924. Vol. 64. No. 3. pp. 428–450.

Against the assertion that appendicitis is rare in the tropics Roegholt publishes his surgical experience in Java, of 57 cases, 50 of which were operated upon (34 Europeans and Eurasians, 4 Chinese and 12 natives). A brief clinical and anatomopathological description of these cases is given, which does not differ from similar series in Europe. Roegholt remarks that the pathologic conditions, generally accepted as causing appendicitis (metastatic infection by way of the blood, by the lymph-vessels, direct from the intestine, traumatic influences) are certainly common enough in the tropics. It is said that appendicitis is rare in natives, but the fact that these patients do not report for treatment is no proof that the disease does not occur in the Malay race. [The annotator, who is in charge of an *indentured* Javanese labour force under strict medical control for over 12 years, has seen not more than three cases of appendicitis during that time, and accordingly can confirm the rarity of the disease in this race. Roegholt's article does not solve the question.]

W. J. Bais.

Shelton (C. F.). **Two Cases of Interest from Arusha District.**—*Appendix VI. Tanganyika Territory. Ann. Med. Rep. for the Year 1922.* pp. 91–92.

One case was an appendix abscess in a native youth of about 18, admitted with a temperature of 101·8°F. and tenderness and rigidity in right iliac region, and having a history of repeated attacks of local pain, often with vomiting, for about a year. At operation a large abscess was found below and internal to caecum and was cleared of thick offensive pus and drained. The appendix was not looked for. A good recovery was made, the last drainage-tube being removed on the 15th day after operation.

The other case was double pyosalpinx in a native aged about 20. At operation two large tubo-ovarian abscesses were found, adherent to surrounding parts, particularly to the rectum. Though gonorrhoea is not uncommon among the women of the locality, pelvic complications appear to be quite exceptional.

A. A.

Lipiński (Witold). **Sporotrychoza błon śluzowych, spowodowana przez nowy gatunek Sporotrichum.** (*Sporotrichum Cracoviense* **n. sp.) Un cas de la Sporotrichose des muqueuses, occasioné par une nouvelle espèce de Sporotrichum** (*Sporotrichum Cracoviense* **n. sp.**).—*Medycyna Doświadczalna i Społeczna.* Warsaw. 1924. Mar./Apr. Vol. 2. No. 3–4. pp. 153–169. With 7 text figs. French summary pp. 168–169. [27 refs.]

Report of a case of sporotrichosis of the mucous membranes occurring in a child, aged 10 years, in whom the lesions resembled a false membrane covering the tongue and palate, with small pin-head-sized nodules and

ulcerations. The fungus obtained was recognized as a peculiar Sporotrichum to which the denomination *S. cracoviense* is given. Among the cultural characteristics described may be mentioned: (*a*) Growth on all media not requiring sugar, (*b*) appearance of growth in 24 hours, (*c*) fungus lives both as aerobe and anaerobe, (*d*) lack of any pigment in the cultures, (*e*) pleomorphism, etc., etc.

W. Jenkins Oliver.

Lleras Acosta (Federico), Vicente Huertas (José) & Esguerra (Carlos). [**La epidemia actual de Bucaramanga.**]— *Repert. de Med. y Cirug.* Bogotá. 1923. June. Vol. 14. No. 9. (No. 165). pp. 356–358.

A further statement on the identity of "Bucaramanga Fever," in the form of a communication from local members of a conference held with a Commission from the Rockefeller Foundation sent out to study the disease. [See Peralta & others: this *Bulletin*, Vol. 20, p. 911.] On the day of the latter's arrival a definite case of yellow fever occurred with typical symptoms and sera taken from patients and convalescents gave positive results with Pfeiffer's reaction and agglutinated *L. icteroides* but not *L. icterohaemorrhagiae*. The Commission decided that the disease was true yellow fever. The authors state that they themselves were quite aware of this and they resent the fact that their word was not taken. The decision of the Commission was accepted without any dissent.

H. Harold Scott.

Montel (M. L. R.). **Etudes de pathologie annamite en Cochinchine.**— *Bull. Soc. Path. Exot.* 1924. June 11. Vol. 17. No. 6. pp. 434–464.

This is a paper of more than common interest. The author has spent 23 years in Cochin-China, a country of 3¾ million inhabitants, and at the Municipal Clinic at Saigon and in private practice has examined and treated more than 150,000 patients. He passes in review not only the incidence of various diseases but the effects upon that incidence of race and environment, and for this purpose discusses at the outset the Cochin-Chinese patient, the country and the dietary régime.

The patients are for the most part semi-indigent, living under deplorable conditions of hygiene and nourishment. Almost all suffer from under-nutrition, and are thin and anaemic; persons with normal musculature are exceptional: arterial hypotension is the rule; the oculocardiac reflex, evidence of vagotonia, is usually present and much exaggerated. It is exceptional to see an uncomplicated disease. The author instances a patient with trachoma, chronic malaria, old syphilis, asthma and emphysema, besides the usual intestinal polyparasitism and pretibial oedema with slight polyneuritis, who comes to hospital for itch and phagedenic ulceration of the foot. Malaria, tuberculosis, syphilis and beriberi are nearly always present.

Cochin-China is a hot humid delta with a most depressing climate; the alluvial soil contains no lime; the water is entirely wanting in mineral salts, particularly lime, and is acid. The native is fed almost exclusively on rice, which is polished and hence deprived of most of its mineral matter as well as proteins. Chemical analysis has shown that the vegetables and cereals of Cochin-China are much poorer in mineral matter than those of Europe.

Immunity from certain diseases.—The native of Cochin-China is of course susceptible to all infectious diseases with the possible exception of scarlatina. The author has never seen a case of this fever nor has one been reported.

Insusceptibility to certain diseases.—Diseases of nutrition, such as gall-stones (cholesterin), urinary calculus (uric acid), gout, diabetes, are rare in these natives. Cholesterin stones in the gall bladder are never seen; the rare ones met with are of bilirubin. In Europeans gall-stones occur in 10 per cent. of men, and 25 per cent. of women. Japanese figures are intermediate, and even in Japan nearly 70 per cent. of the calculi are of bilirubin. De Langen, whose work led the author to the present study, is here referred to [see this *Bulletin*, Vol. 20, p. 648]; in the Dutch East Indies the findings are the same as in Cochin-China. As de Langen remarks, this is upsetting to those who hold the theory of infective origin of biliary calculi, for infections (typhoid, dysentery) are much more frequent than in Europe. De Langen showed that whereas the blood cholesterin mean in the European was 1·5 gm. per litre, in Java it was only 0·88. Probably the same is the case in Cochin-China, and the poverty of the diet in cholesterin is noted; the natives do not consume either milk or eggs and meat very rarely. The author has never seen a case of uric acid stone in the kidney, though phosphatic stones are common enough in kidney and bladder, particularly in the young. Once only was an affection seen which could be called gout, and this was in a fat Europeanized native. Chronic gout is quite unknown. Diabetes is extremely rare, but less so in the well-to-do classes; ten cases were seen, all in this class. In the wealthy Chinese it is common enough, more so than in Europe, and in the caste Hindus in Cochin-China diabetes is of extraordinary frequency. Reference is again made to de Langen.

Other diseases relatively rare in Cochin-China are acute and chronic rheumatism and nodular rheumatism; but it is noted that articular rheumatism is not uncommon in Tonkin, a damp country with a winter season.

Susceptibility to certain diseases.—The most important affection here is tuberculosis, especially of the lungs. It is generally believed that this disease develops more rapidly than in Europe with predominance of caseous and destructive forms, rapidly generalized in the whole lung. The author does not subscribe to this view. He has met chiefly with fibrous forms progressing slowly. He knows some twenty cases in which recovery has ensued, and believes that spontaneous cure is not rarer than in Europe. However, the native of Cochin-China has less immunity than the European, and is consequently more susceptible to the pulmonary form. In these natives haemoptysis is frequent, much more so than in Europe, and is a common cause of death. It may be so profuse that the subject dies in the street. It is part of the special liability to bleed possessed by the Cochin-Chinese. Tuberculosis of the larynx closes the scene in pulmonary tuberculosis more often than in Europe, but tubercular peritonitis is unusual. Tuberculosis of the joints and skin is very rare in the Annamites of Cochin-China as long as they remain in the country, but the same Annamite in Europe becomes as susceptible, if not more so, than the European; this was noticed in the Annamites serving in France in the War. The author would attribute this insusceptibility to the sun's action, a sort of involuntary heliotherapy, and says that it is generally known that lupus is far rarer at Marseilles than in Northern France. The frequency of the pulmonary form of tuberculosis is attributed to the comparative

absence of infection in childhood, and to the climate and deficient régime; the absence of lime, which is known to favour the coagulation of the blood, may cause the tendency to haemorrhage, especially in tuberculosis. Bovine tuberculosis is almost unknown, and the Annamites never drink milk. De Langen in Java attributes the frequency of pulmonary tuberculosis to hyperglycaemia favouring the development of the bacillus and hypocholesteraemia enfeebling the resistance of the native.

Asthma is much more common than in Europe, and there is a special tendency to acute affections of the lung, and particularly the pneumococcus, but less so than in the coloured races.

Beriberi is common and may complicate any disease; the author puts it that the peripheral nervous system of the Annamite is particularly vulnerable. As de Langen suggests, this may be due to his hyperglycaemia. The author notes his predisposition to arterial hypotension with debility of cardiac muscle; thus the beriberic tends to sudden collapse. The cardio-vascular system of the Annamite is much more labile than that of the European.

Syphilis in Cochin-China presents itself under much the same aspects as in Europe, but the secondaries are in general more florid; large chancres are frequent. Tabes and general paralysis are rare. The first case of tabes in an Annamite was recorded in 1916 [see this *Bulletin*, Vol. 12, p. 131]; another has been seen since, but not a single instance of G.P. Indian and Japanese experience of these diseases is cited. In North China neither is met with, but at the Hospital for the Insane, Canton, G.P. is not infrequent, and tabes is sometimes seen; these patients, however, come from south, not "continental" China, and are mostly sailors. Of 13 cases examined by the author, five were sailors and six had travelled far. All came from the ports. At Singapore the Malays get neither tabes nor G.P., but the Chinese are attacked. Possible reasons for these differences are discussed. It is noted that myelitis, cerebral gumma, spastic paraplegia, are as common as in Europe, so that there is no question of a "dermotropic" virus.

The natives of Cochin-China are prone to convulsions, especially the children. A third of the deaths of infants are returned under this heading, and there is hardly a family which has not lost one infant from this complication, which may be due to nothing graver than constipation. This spasmophilia may be related to the deficiency of lime or to disturbance of function of the parathyroids.

As in Java hepatic cirrhosis is common, whereas gastric ulcer, gastric cancer, nephritis, amyloidosis, prostatic enlargement, rickets, appendicitis are rare. The Annamite peritoneum is remarkably resistant to infectious germs. Cheloid and vitiligo are common. The author concludes his paper with remarks on the psychology of the Annamites of Cochin-China.

A. G. B.

Metcalfe (A. J.). **A General and Medical Survey of Thursday Island.** —*Health*. Melbourne. 1924. May. Vol. 2. No. 3. pp. 65–73. With 1 map in text.

Thursday Island is one of the smallest (2 square miles) of the large group forming the Torres Straits Islands. The hospital records show it to be one of the healthiest parts of Australia. It contains about 1,500 people, including 400 whites, 600 Japanese and 300 Papuans.

The industries are those of pearl shell, beche-de-mer and trochus shell; the trochus fly, which breeds in the decaying flesh of the trochus shell, is often a pest. Housing is unsatisfactory. Houses of galvanized iron are unsuitable and wood is subject to the ravages of borers and white ants. A new species of termite has lately been introduced which "can live quite isolated from the ground, and, apparently, can transport itself quite readily from one building to another." Most of the food consists of tinned or preserved stuffs; but goats are numerous. The water supply is good. The hospital returns, accurately kept since 1899, show that apart from beriberi there is little sickness of local origin. Dengue appears every year. Malaria does not arise in the island; few anopheles have been seen and breeding places are rare. The prevalent mosquitoes are *Aëdes aegypti* (*Stegomyia fasciata*) and *Culex quinquefasciatus* (*C. fatigans*). Yaws is common: gangosa and ulcerative granuloma are seen. Of typhoid and paratyphoid, 50 cases have been treated in the last 14 years; the means of infection must be flies and carriers. Thursday Island itself is free from hookworm, and is probably too dry to become infested, but the other islands and the mainland are heavily infected; the Papuan recruits for the pearling fishing are treated on arrival. The cemetery shows hundreds of victims of beriberi. Its prevention is difficult. The luggers, which are often at sea for months, must carry food that will keep, while each crew contains both Japanese and Papuans. Pulmonary tuberculosis has caused 46 deaths in 8 years; 2–4 per cent. of the permanent residents are affected. Factors of its causation are the housing, food and clothing of the wage-earners. Severe epidemics of dysentery have visited the island, such as the one described by Breinl in 1910. The influenza epidemic occurred in 1920, much later than in Southern Australia; 22 deaths were recorded. The island contains a small well-equipped quarantine station.

A. G. B.

Sitsen (A. E.). **Ueber den Einfluss der Rasse in der Pathologie.**—*Virchows Arch. f. Path. Anat. u. Physiol.* 1923. Vol. 245. pp. 281–294. [35 refs.]

Twelve years' residence in the Dutch East Indies have raised in the author doubts as to the correctness of current ideas of racial differences in pathology. Such differences can be usually explained otherwise. To compare Europeans and Malays—Europeans are bigger, but this is probably the result of better food and other environmental conditions. The curves of the long bones in the legs are more pronounced in Malays; this is attributed to the squatting attitude, to which also the author would assign differences in the pelvis and vertebral column. It has been shown that the female Malayan pelvis is rounder than the European, and the author finds the same to be the case with the male. In Malays the small intestine is longer than in European, averaging 7¼ metres; this is put down to the vegetable diet. Taking into acccount the differences in the size of the subjects, the Malay salivary glands should weigh 31–40 gm., but in 66 corpses examined the weight exceeded this upper limit; this also is attributed to the diet, which requires a large amount of saliva. Müller has drawn attention to the small thyroid and narrow aorta of the Malay, but the author doubts whether these are race characters. The small cholesterin content of the blood of the Malay was believed to be a race character till Malays in Holland were found not to differ in this respect from Europeans and the defect to be dietetic.

On the pathological side the author draws attention to the frequency of liver cirrhosis: alcoholism is rare, tuberculosis can be exonerated; on the other hand, syphilis is frequent, and the author would attribute a significant rôle to malaria. JAFFE has shown that the injection of blood-destroying substances, including haemoglobin, into animals will produce cirrhosis. Croupous pneumonia also is considered. It is common among Malays; its course is atypical, and the mortality varies between 75 and 15 per cent. It is a form with little fibrin, which occurs in Europe in alcoholics, old people, little children and weaklings, and the author would explain it by the fact that, owing to their large ankylostome infestation, to chronic dysentery and malaria, the Malays are to be reckoned with the last class. Malaria he considers an important cause, owing to its destructive action on spleen tissue. Tuberculosis among the Malays is much more acute than in Europe. In Central Europe in the War the type changed, and became like that of Java, so that the author believes that this type is the result of ill-nutrition and diseases which weaken resistance. Arteriosclerosis, on the other hand, is infrequent in Malays. The cholesterin content of the blood, however, is small, and the blood pressure low, which would account for the rarity of sclerosed arteries. The rarity of appendicitis he puts down to the vegetable diet. Lastly, malignant tumours. The general opinion is that these are rare in the Dutch East Indies. But whereas in Europe carcinoma is the common form (324 in 381 in figures from Breslau), in the Dutch East Indies this disproportion does not hold. In 52 operations on Javanese there were 24 sarcomas and 28 carcinomas. The general mortality is so high that fewer of the Javanese reach the cancer age. SNYDERS found that the frequency of malignant disease in coolies at Deli was somewhat greater than among persons of the same age in Europe.

The upshot is that for supposed race differences enquiry will usually reveal another cause.

A. G. B.

GREGORY (J. W.). **Inter-Racial Problems and White Colonization in the Tropics.**— *Addresses delivered at the Meeting of the Brit. Assoc. for the Advancement of Science (94th Year) in Toronto: August* 6–13. 1924. Section E.—Geography. pp. 1–24. [3 refs.]

We are concerned only with the second part of this fascinating address, which deals mainly with the colonization of the Northern Territories of Australia. The supposed unfavourable factors in tropical life are discussed under the headings: moist heat, monotony in temperature, actinic rays. None is deterrent. It has been shown that men can withstand wet-bulb temperatures of 85°, though power of work is greatly reduced; the worst localities of Tropical Australia are compared by Dr. TAYLOR with Calcutta, "one of the healthiest cities in India, with a large and vigorous European population." Places with monotonously equable climates are in positions whence a change may be secured by a visit to some neighbouring hill country. Actinic rays are a bogey; they are favourable to life rather than nocuous. The remaining factors "rest on ill-defined nervous ailments which are more likely to be due to domestic difficulties than to climate."

Accounts are given of the improvement by public sanitation of such areas as Walcheren and Algeria, now health resorts, as well as the Spanish Main and Panama, and of old-established European

settlements in the Tropics, such as the islands of Saba and Kisser, and Santa Katharina, where physical deterioration has not taken place. The favourable vital statistics of Queensland are cited, the low rejection-rate of recruits for the Citizen Army, the experience of the life assurance offices. The slow development of the Northern Territory is explained by the poverty of the soil, the annual drought lasting about six months, the absence of communication with the rest of Australia, and the last is remediable.

The history of the cane-sugar industry in Queensland is of particular interest. Some of these estates are in localities with "extreme tropical climates." In 1901 it was decided, in spite of widespread predictions of disaster, to prohibit South Sea Island labour. The result was, not collapse of the industry but increased prosperity. A table shows that in the last returns the acreage has increased by 50 per cent. and the output of sugar by nearly 100 per cent., though natural circumstances are not favourable. The author writes :—

"The Australian adoption of white labour for its sugar plantations has been the greatest contribution yet made to the practical solution of the problem whether the white man can do agricultural work in the tropics. The experiment shows that white labour can be employed successfully in such an ultra-tropical industry as sugar cultivation in even the ultra-tropical climate of the Queensland coastlands, provided the settlers are protected from infectious disease and from the competition of people with lower standards of life," and concludes, "Australia will throw away a unique opportunity if it fails to make a patient effort to secure the whole continent as the home of the white race."

A. G. B.

Nauck (Ernst Georg). **Die Kinderdosis der gebräuchlichsten Heilmittel in der Tropenmedizin.** [The Dosage for Children of the Remedies most frequently employed in Tropical Medicine.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1924. Aug. Vol. 28. No. 7. pp. 280–289. [3 refs.]

This is itself a summary. The remedies treated are vermifuges (chenopodium, thymol, santonin, carbon tetrachloride and others) ; antimony and its preparations ; emetine ; quinine ; neosalvarsan ; atoxyl ; chaulmoogra ; serum ; saline infusions. Much information is gathered, without generalization or criticism.

A. G. B.

Cory (George). **A Glance at the Medical History of the Cape Colony, particularly of the Eastern Province.**—*S. African Med. Rec.* 1924. May 10. Vol. 22. No. 9. pp. 192–197.

When Cape Colony came under British rule, in 1806, the men who professed the healing art appear to have been of a kind that to describe as "unqualified" would not be sufficiently derogatory. The first Governor General, however, instituted a sort of Medical Council, which purged and purified the profession by examinations and kept it in the strait path by heavy fines for unqualified practice. In 1821 a Colonial Medical Inspector was substituted for a Council, but in 1825 the Medical Council was re-established. The first hospital seems to have been started as a sort of private enterprise about 1833, at Grahamstown ; but it was not until 1857 that it became a general hospital in the ordinary sense, shortly after the Grey Hospital had been founded at Kingwilliamstown. Among the *dramatis personae* of this

somewhat eccentric early stage were Dr. MACKRILL, who brought buchu to the notice of the profession; the famous Dr. James BARRY — the army doctor who rose to be an Inspector-General of Hospitals and was discovered after death to be of the female sex; and Dr. W. G. ATHERSTONE, whose hobby was geology, and who recognized the first diamond found at Kimberley as the real thing. Epidemics of what "have been called influenza and measles" have periodically devastated Cape Colony; of the first, "about 1817," no records have been kept beyond that it swept away thousands; the next, in 1839, broke out at Cape Town, where 6,655 cases and 51 deaths occurred, and then spread throughout the colony; the next, in 1867, described as "measles," also made its appearance in Cape Town, where 5,000 cases occurred in seven months and 1,493 deaths within 36 weeks.

A. Alcock.

CAMERON (Thomas W. M.). **The Pig and Human Disease.**—*Proc. Roy. Soc. Med.* (Sect. Comparative Med.). 1924. July. Vol. 17. No. 9. pp. 31–37.

The author discusses, with due regard to the importance or otherwise of the particular practical outlook, the diseases common to the pig and man, including swine diseases that are communicable to man, and diseases and animal parasites that comprehend the pig and man in a wider community of specific hosts. He mentions and discusses tuberculosis, aphthous fever (foot-and-mouth disease), swinepox, swine-erysipelas, anthrax, rabies, and actinomycosis, as bacterial and fungus diseases possibly communicable from the pig; *Bacillus enteritidis* Gaertner and *aertrycke* (the latter of which is probably identical with *Bacillus suipestifer*, the swine fever bacillus) and *Bacillus botulinus*, as bacterial diseases communicable by pork; and the following list of animal parasites:—*Balantidium coli*, *Sarcoptes scabiei*, *Pulex irritans*, *Tunga* (*Sarcopsylla*) *penetrans*, the rat-tail larva of Eristalis, *Linguatula serrata*; the flat-worms Paragonimus, *Fasciola hepatica*, *Clonorchis sinensis*, *Dicrocoelium dendriticum*, *Metagonimus ovatus*, *Schistosoma japonicum*, *Gastrodiscoides hominis*, *Fasciolopsis buski*, *Taenia solium*, and *Echinococcus granulosus*; and the roundworms *Ascaris lumbricoides*, *Necator americanus* (?=*suillus*), (?) *Ancylostoma duodenale*, *Trichinella spiralis*, *Strongyloides stercoralis*, *Metastrongylus elongatus*, (?)*Mecistocirrus digitatus*, *Dioctophyme renale*, *Gnathostoma hispidum*, and *Echinorhynchus gigas*. Among other matters the author draws attention to the prevalent neglect of porcine pathology with its obvious bearings on the science of medicine.

A. A.

ARCHIVES OF MEDICAL HYDROLOGY. 1924. May. No. 5. pp. 149–155. With 1 fig.—**Discussion on the Treatment of Tropical Diseases by Waters and Baths.** (At a Special Meeting of the International Society of Medical Hydrology, held at the Royal Society of Medicine, London, on Wednesday, March 5th, 1924.) Opened by Dr. Robert PIERRET.

This discussion was opened by Dr. PIERRET (La Bourboule), who confined his remarks to the French Continental Spas. Of spas which possess "a specific antiparasitic action" coupled with a metabolic one, he states that La Bourboule is the only representative. Of metabolic spas he instances Vichy. The La Bourboule water contains 29 mgm.

of sodium arsenate per litre, " equivalent to about 31 drops of Fowler's solution." Here, in the war, 3,000 French soldiers were treated for malaria ; the cure took 4–5 weeks ; quinine was given, it appears, as well as the water. For " large tropical livers " Vichy is recommended.

Sir Leonard ROGERS pointed out that a " vast proportion " of cases of tropical hepatitis were secondary to amoebic disease of the bowel, though the signs of this might be slight or absent. No case of hepatic disorder of tropical origin should be treated by other means till emetine had been used and amoebiasis quite excluded.

The claims of Harrogate and of Cheltenham were supported by other speakers, and the President (Dr. Fortescue FOX) gave an account of the British records on the subject of the discussion.

A. G. B.

ACTON (Hugh W.) & CHOPRA (R. N.). **Some Factors in Individual Susceptibility.** – *Indian Med. Gaz.* 1924. June. Vol. 59. No. 6. pp. 278–289. With 11 graphs. [9 refs.]

The study of asthma and urticaria with the individual idiosyncrasies often associated with these diseases, and the observation of the widely-varying effects of certain bases—extracted by a uniform process—of diseased rice upon different experimental animals of one and the same species, led the authors of this interesting paper to conceive of idiosyncrasy (as individually illustrated in asthma and hay-fever from animal and plant emanations, in urticaria and asthma from intestinal absorption, in anaphylaxis and serum-sickness from injection of foreign proteids, and in intolerance of certain drugs) as a physico-chemical business in which the " mechanism " (for they use the prevalent materialistic terminology) of *endocrine defence*, through the sympathetic nervous system, is intimately involved. This paper records their attempt to clarify this conception by experiment.

In their first set of experiments they studied the effects upon blood-pressure, heart, respiration, and (as severally necessary) limb and spleen and intestinal volume, of intravenous injections of tyramin, pilocarpin, and adrenalin under varied conditions of specific endocrine energy. They have registered the effects of these three bases on cats fed for a week on fairly large doses of thyroid and on cats deprived of their thyroid (without complete excision of the parathyroid) ; they have registered the effects of the first two of them, in the same way, under excessive administration of adrenalin and under deprivation of adrenalin (by the difficult operation of excision of the glands) , and they have made limited observations of the tyramin and adrenalin response of the same animal before and after administration of commercial pituitrin. Limitation of space precludes the details of these experiments ; it must be enough to say that they give support to the proposition that the intensity of the effects of a given base vary concurrently with the amount of the endocrine secretions present in the tissues.

In another series of experiments the authors studied the effects of tyramin, pilocarpin, and adrenalin on plain unconditioned cats, and found that among the individual reactions of the animals different types of curves for the several bases could be distinguished, which types, when compared with the corresponding curves of cats respectively dosed with and deprived of specific endocrine secretion, could be classed as indicating individual states of comparative insensibility and of comparative over-sensibility. [The argument is slightly ingenious.]

In the above experiments the effects of intravenous injections of the base are analysed and compared; but as regards susceptibility to drugs ingested by way of mouth, there has to be taken into account, besides endocrine defence, the effect exercised upon the permeability of the cell and upon the electrical conductivity of its surface by H-ion concentration and the effect of the activities of the liver.

The authors distinguished a "congenital," or natural, susceptibility, or idiosyncrasy, which they appear to regard as an individual lapse from a natural immunity inherent in a species, and an "acquired" susceptibility resulting from disuse of a long-accustomed food or drug, and manifested when, after an interval, that use is resumed. They make this distinction, and they record a third series of experiments showing the varying intensity of action of tyramin, pituitrin, and adrenalin in four different species of animals to illustrate what is termed "congenital" susceptibility; the details are interesting, but have merely a vague benedictory bearing on the particular argument of defensive mechanism.

The main purpose of the paper is to represent the phenomena of susceptibility as a series of complicated chemical interactions to be elucidated by experiment and by clinical evidence, to the ultimate understanding of such difficult diseases as scurvy, asthma, beriberi, etc.

In their practical conclusions the authors emphasize (1) an important *remote* action of adrenalin in diminishing capillary permeability, and therefore presumably useful in toxic oedemas and food asthma, as well as in urticaria; (2) the effect of thyroid secretion in increasing the vasculo-tensor but inhibiting the bronchio-relaxor action of adrenalin; and (3) the application of commercial pituitrin for stimulating torpid unstriped muscle. They also suggest a plausible explanation of quinine susceptibility as a result upon the circulatory system of the co-existence in the bloodstream of an excess of thyrotoxin, and a high concentration of unchanged quinine, the latter phenomenon being due to increased absorption from a too-alkaline bowel, deficiency of bile, and other defective functioning of the liver; and they think that susceptibility to certain "food diseases" may be similarly explained, with due regard to the contributory interaction of vitamines.

A. A.

McCarrison (Robert). **The Effects of the Excess-Ingestion of Certain Amino-Acids on the Growth, Metamorphosis and Thyroid Gland of Tadpoles.**—*Indian Jl. Med. Res.* 1924. Apr. Vol. 11. No. 4. pp. 1131–1136. With 2 plates. [1 ref.]

The amino-acids used were alanin, valin, leucin, tyrosin, tryptophan, and histidin. Fifty ten-day-old tadpoles of one batch were used for each test, all, as well as controls, being under the same ménage. The main results are as follows:—

Ingestion of amino-acids in amounts that had little or no influence on mortality rate tended to retard growth, tryptophan most so; but in the case of histidin retardation in the first weeks was balanced by enhanced growth in the last weeks. Histidin hastened metamorphosis; all others retarded it more or less, tryptophan most. All, except tryptophan (which caused an increase), caused a reduction in size of the thyroid as estimated per gramme of body-weight. All caused a reduction in number—out of proportion to the reduction in body-weight—of the thyroid vesicles; the vesicles were, in general, bigger in the case of tyrosin and tryptophan, smaller in the case of histidin. The thyroid contained, area for area, most

colloid secretion in tryptophan-fed, least in histidin-fed animals. The effects of excessive ingestion of amino-acids on the histological structure of the thyroid were few and indefinite; tyrosin sometimes caused congestive and degenerative changes.

A. A.

i. Le Roy des Barres (A.). **Note sur le goitre au Tonkin.**—*Rev. Méd. et Hyg. Trop.* 1924. Apr. Vol. 16. No. 4. pp. 97–101.

ii. Jeanselme (M. E.). **Goitre, myxoedème et crétinisme en Indo-Chine et au Yunnan.**—*Ibid.* May-July. Vol. 16. No. 5. pp. 140–142.

i. Goitre is met with in the hilly part of Tonkin and exceptionally in the Delta. The higher one gets the more cases are found, and in certain narrow valleys at an elevation of 900 metres the proportion of cases is as much as 60 per cent. It is two and a half times commoner in females than males, and develops chiefly between the ages of 6 and 15. The natives incriminate certain springs, which, in some instances, at lower points, become harmless; these springs are usually rich in calcium and magnesium. Both parenchymatous and adenomatous forms are found. The symptoms are as a rule slight, and cretinism is unknown. Treatment by iodine has given good results here as elsewhere.

ii. Jeanselme refers to an article published in 1910 in which he described many cases from Indo-China in which myxoedema was associated with goitre. He cites some passages, from which it seems clear that cretins are by no means uncommon there.

A. G. B.

i. Dolbey (Robert V.) & Omar (Mustafa). **A Note concerning the Incidence of Goitre in Egypt. An Analysis of 216 Cases.**—*Lancet.* 1924. Sept. 13. pp. 549–550. [6 refs.]

ii. Balfour (Andrew). **Incidence of Goitre in Egypt.** [Correspondence.]—*Lancet.* 1924. Sept. 27. p. 677.

i. Simple parenchymatous or colloid goitre is extremely common in the Nile valley, but disorders of secretion resulting in hyperthyroidism and exophthalmic goitre or in myxoedema and cretinism are almost unknown. The authors have analysed 216 cases of thyroid enlargement admitted to Kasr-el-Ainy Hospital in the last five years. Of these 198 were colloid and adenomatous goitre, 9 malignant disease, 4 exophthalmic goitre, and 5 myxoedema or cretinism. Almost all these patients were fellaheen or manual workers of the cities, but it is noted that among wealthy Egyptians who live in the towns, and have adopted European habits, disorders of thyroid secretion are much more frequent. Thyroid enlargements have existed in Egypt since 2000 B.C., as may be seen in reliefs and wall paintings; cretins are never shown. Nowadays 18 women are affected to one man; the usual age of the women is 35, and nearly all have married young and borne children. The disease is not found among the Bedouin Arabs of the desert. As to possible causes, the villages on the Nile bank drink the river water, but the great majority of the rural population depend upon wells and irrigation channels which are "incredibly polluted"; it is among the latter that the thyroid enlargements occur. The iodine content of Nile water is slightly higher than that of London's water, and the salt used has also a higher iodine content than the table

salt of Europe. Oral sepsis may be a contributing cause. The fellah's teeth are uncared for, and are commonly filthy, and it is at the age when the teeth become septic that goitre appears. The diet is almost wholly vegetarian and cannot be of influence. The conclusion is that the colloid goitre of Egypt is almost entirely due to the polluted water supply of the non-riparian villages, and the greatly lower incidence in the male may be due to his drinking from comparatively clean sources in the course of his work.

The absence of disorder of secretion of the thyroid among the fellaheen is attributed to their vegetarian vitamin-rich diet, the extreme rarity of nervous diseases among them, the complete absence of intestinal stasis and of suppressed emotions, the absence of financial worry, "the simple uncomplicated lives" led by them, the high infantile mortality which would wipe out cretins, and their endocrine balance; all disorders of internal secretion, excepting diabetes, are rare. Similarly the development of disorders of thyroid secretion in the towns is attributable to the converse of these conditions. It is noted that the suprarenal capsule of the Egyptian is larger than in the Western European; the average weight in 200 autopsies was 5 gm., against the European average of 3·5 gm.

ii. Dolbey & Omar say they have been informed that there is no goitre in Abyssinia. Dr. Balfour draws attention to a paper by Dr. Charles Singer (*Jl. Trop. Med.* 1905, p. 17), who reports, with photographs, various forms of goitre as not infrequent in the south-west Abyssinian plateau.

A. G. B.

Nicholson (M. A.). **The Effect of Enteric Vaccine on Endemic Goitre in Children.**—*Indian Med. Gaz.* 1924. June. Vol. 59. No. 6. pp. 289–292. [2 refs.]

The children were those of the Royal Lawrence Military School founded for the children of British soldiers serving in India; it is situated near Kasauli and accommodates 500. Goitre has long been prevalent, and especially so since 1899. The majority of the inmates were vaccinated against enteric in 1900, and again in 1913. It is concluded from the investigations, which have evidently been carefully conducted, that neither T.A.B. nor enteric vaccine had any effect, curative or prophylactic, on the endemic goitre prevalent at the school, and it is noted that endemic goitre is a condition peculiarly liable to spontaneous disappearance and reappearance. Half the cases of goitre disappeared spontaneously before the subjects left the school.

A. G. B.

Elders (C.). **De tegenwoordige opvattingen over Endemische Krop. Samenvattend overzicht.** [Epitome of the Present Views on Endemic Goitre.]—*Tijdschr. v. Vergelijkende Geneesk. enz.* Leyden. 1924. Apr. 26. Vol. 10. No. 2–3. pp. 120–127. [10 refs.] [English summary, p. 126.]

The English summary is as follows!—

"The newer knowledge of Endemic Goitre and the physiology and pathology of the thyroid gland is discussed, and seems to lead to the conclusion that the time has come for the government of the Dutch East-Indies to take in hand the prophylaxis of Endemic Goitre in the mountainous districts of Java and Sumatra."

A. G. B.

Snijders (E. P.) & Straub (M.). **Contributions to the Cancer Problem in the Tropics.**—*Far Eastern Assoc. Trop. Med. Trans. Fifth Biennial Congress, Singapore, 1923.* pp. 779–804. With 11 figs.

This is quite the most valuable paper that has appeared on the subject of cancer in the tropics. The views of the authors may be guessed from the motto which stands at the head—"To see hidden things, we must search for them." They do not follow the facile doctrine so much in vogue now that malignant disease in primitive races is rare and is related to the mode of living: rather they hold that the available data are insufficient, that vital statistics of the native races are almost entirely lacking and the age-distribution unknown, that only a small proportion come under medical observation and post-mortems are rare. They suggest, therefore, that "internal cancers escape observation nearly totally," and note that recent investigations show that malignant tumours are not so unusual among primitive races as was supposed. They give a useful résumé of the published papers, unfortunately without references. They themselves are in a favourable position for collecting reliable statistics of the native labour force at Deli, Sumatra, for the hospital statistics cover many years, all sick coolies are sent to hospital, approximate age figures are available, and as a rule post-mortems are made. They report on 447 tumours examined at the pathological laboratory, Medan, between 1914 and 1923.

Chart II.—Proportion of Carcinoma, Sarcoma and other Tumours.

	Javanese.	Chinese.	European.	Others.	Unknown.	Total.
Carcinoma ..	101	75	20	25	4	225
Sarcoma ..	38	15	7	5	3	68
Other tumours	69	45	16	21	3	154
Total ..	208	135	43	51	10	447

A detailed table is given of the carcinomata, summarized thus:—

Chart IV.—Summary of Chart III. in Percentages.

	Stomach.	Oesoph.	Intest.	Liver.	Ovary.	Uterus.	Mamma.	Skin.	Penis.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Javanese. Male : female =2 : 1 ..	1	0	2	**55**	3	**16**	2	7	5
Chinese. Male : female =10 : 1 ..	**19**	4	3	**28**	1·2	0	2·8	9·3	10·1

There were 85 carcinomata of the liver, 79 of which concerned the liver cells, and this preponderance is the most striking feature. Taking the authors' own figures, of 887 post-mortems in 40 there was a malignant tumor, 30 of these were cancers and 13 primary cancers of the liver.

The symptoms follow two types: either the tumour, usually of the right lobe in rather young people, grows rapidly, is often painful, may cause fever and be diagnosed as abscess, or the process is that

of a cirrhosis of the liver which becomes large and knotty. The primary liver cancers can be distinguished microscopically by the often close resemblance of a part of the tumour cells to the normal liver cells and of the structure of the new growth to that of the normal liver. Of the 79 carcinomatous livers referred to above, 67 were cirrhotic, and 7 were not; in 5, the data were insufficient. The authors see a close etiological connexion between cirrhosis and primary cancer of the liver. In their own material cancer occurred in one-fifth of the cirrhosis cases. Straub calculates that among the coolies cirrhosis is 5–10 times as frequent a cause of death as among a comparable age-group in Holland.

The authors tabulate the data from ten papers which concern Africa (6) or the far East, and show that of 438 cancers 171 were primary liver cancer. Among Javanese women cancer of the womb takes the first place. The conclusion is that "we must except the carcinoma hepato-cellulare at least from the assumed general rule of the rarity of cancer in the tropics."

For the rest of the paper the authors' summary must serve :—

"(1) Among the Javanese and Chinese in Deli (east coast of Sumatra) all kinds of tumours occur.

"(2) In Deli tumours are not at all rare. As to the malignant new growths, the number among our coolies (Javanese as well as Chinese) is not lower than among comparable groups in Europe. The sentence of R. Williams on Borneo, Java and Sumatra—a single example of a malignant tumour is 'esteemed a great rarity'—is certainly obsolete.

"(3) There are two kinds of apparent rarity: firstly, the tumours do not come under observation because of want of contact with the indigenous population; secondly, the age-incidence is not taken sufficiently into account (an orphan asylum is to be distinguished from an asylum for old people). . . . . .

"(4) The site-incidence of the tumours of our list is very remarkable in some respects and merits a thorough consideration.

"(5) The most striking feature is the high frequency of the primary cancer of the liver, among the Javanese as well as amongst the Chinese (in 90 per cent. of our cases in cirrhotic livers).

"(6) Cancers of the stomach do occur; although amongst the Chinese they take but a second place, and amongst the Javanese they seem to be rare. Ulcers of the stomach are very frequent amongst the Chinese, very rare among the Javanese.

"(7) Cancers of the buccal cavity are rare among the Javanese, perhaps rather frequent among the Singhalese.

"(8) Carcinomata of the intestines are rather rare, which is noteworthy when considering the high frequency of inflammatory affections of the intestines.

"(9) Penile cancers are rather frequent among our Javanese, probably also among Chinese and Singhalese.

"Carcinomata of the portio uteri are rather frequent amongst Javanese women. The age incidence of both is relatively low.

"(10) Melanotic new growths are rare.

"(11) Cystadenomata of the ovary are frequent among Javanese women, fibromyomata uteri rare.

"(12) 'Simple mixed tumours' are not seldom seen (orbita, salivary glands).

"(13) These conclusions agree very closely with those of other workers in the tropics, especially Daniels and Degorce (for Chinese and Annamites), and with regard to the primary cancer of the liver, also with the Japanese figures, and the recent figures from Africa concerning the negroes (Mouchet and Pol-Gerard, Appel, etc.).

"(14) So the great question, 'why in general malignant tumours are rare in the tropics,' is incorrectly put. It must run: 'Why is the *site-incidence* of the *malignant tumours* quite different from that in Europe?'

"To go deeper into the question for the present we must split up the cancer problem into separate definite problems for the separate organs, *e.g.*, why is primary cancer of the liver so *frequent* in many tropical countries as compared with Europe? Why is cancer of the buccal cavity so frequent in Travancore and Saigon, and probably much rarer in Tonkin and the Dutch Indies, though betel-chewing is common in all these countries? Why is mammary cancer rather rare in Japan and probably also among the Javanese?"

Van Dort suggested that the frequency of buccal cancer in the Singhalese as compared with the Malayan races, may be due to their stronger betel "quid"; and that Aryans are comparatively free from primary carcinoma of the liver as compared with Mongolians and negroes. This would explain the relative freedom of Calcutta and Colombo.*

A. G. B.

Bulletin de l'Office International d'Hygiène Publique. 1924. Feb. Vol. 16. No. 2. pp. 171–177. [9 refs.]—**Quelques indications sur le cancer dans les Colonies françaises d'après les réponses au Questionnaire sur les différences internationales dans la mortalité par cancer, envoyé conformément à la décision du Comité de l'Office International d'Hygiène publique dans sa session d'octobre 1922.**

Although this paper purports to be based on replies to a specific questionnaire it is merely an interim report, since many replies have still to come in and for lack of them recourse seems to have been made to old reports.

In French Somaliland cancer is said to be unknown. The same in Haute Volta, the only West African colony from which a return has been received. But according to Le Dantec primary cancer of the liver is known to occur in Dakar, and surgeons in other places in West Africa have recorded cases of malignant tumour of other organs.

In Madagascar, where the survey is proceeding, malignant disease seems to be rare, though cancers of breast and womb have been verified, and some cases of cancer of rectum and stomach and parotid region have been diagnosed. In Réunion 'no return' a summary of old records, some of them extending over 27 years, supplies about 150 cases of malignant disease, mainly of breast and womb, but also including tongue, stomach, intestine and liver.

In Pondicherry 27 cases of malignant tumour have been admitted to hospital in three years, of which 10 were uterine.

From Cochin China no returns have yet been received, but in Cholon of 2,025 admissions (in 1902 3), only 9 were diagnosed as cancer, in Choquan of 2,842 (in 1899 90), only 6, and in Cambodia and Laos in three years only 3 and 5 cases, respectively, were admitted as cancer. In Annam, however, malignant tumours seem to be not uncommon, since in ten years 348 cases were treated surgically; and the same in Tonkin, where in the course of seventeen years nearly 2,000 native cases have been admitted to the hospitals.

* Attention is drawn to a curious misprint. "According to . . . . Harvey, *Pirie schistosomum* may play a part." Dr. Harvey Pirie, whose paper was noticed in this *Bulletin*, Vol. 20, p. 213, found schistosomes in 10 out of 36 cases of liver carcinoma. It is to be hoped that this new "genus" will not make an appearance in the text-books.

From the Pacific islands no returns have been received ; nor any from the West Indies, except Martinique, where 1 in every 15 of hospital deaths is attributed to malignant disease. In French Guiana neoplasms seem to be rare ; one medical officer of 23 years' experience has seen 1 or 2 cases of cancer of breast or womb annually, but never a case elsewhere, except 3 cases of cancer of tongue, in all his time.

A. A.

Maxwell (James L.). **Cancer among the Chinese.**—*China Med. Jl.* 1924. Apr. Vol. 38. No. 4. pp. 299–301.

The author, while allowing that little of precision is known about cancer in China, shows that that little is instructively paradoxical. Only one of its common Western forms, namely cancer of the cervix, appears to be equally common in China. The assumed age factor does not apply to China, since though the cancer rate is " very considerable " the expectation of life is " very low." The chronic irritation theory has one significant illustration in China—namely, the epithelioma of the trochanteric region, met with in the Kansu province, and attributed to the habit of sleeping on the hot *k'ang* or brick-stove-bedstead ; this has a parallel in the *kangri*-burn cancer of Kashmir. But cancer of the breast and cancer of the stomach, so common in the West, are relatively infrequent in China, though chronic irritation of the nipple is the commonest of things, since children are frequently suckled until their milk-dentition is fairly complete ; and in South China the stomach constantly suffers from overloading with rice, and gastric and duodenal ulceration are by no means rare. Nor is the buccal cancer of the East—attributed to the constant irritation of the familiar quid of betel—common in Formosa, where betel-chewing is customary with a large number of the population.

A. A.

Maxwell (James L.). **Betel-Chewing and Cancer.** [Correspondence.] —*Brit. Med. Jl.* 1924. Apr. 19. p. 729.

In reference to the articles on this subject by Spittel and others (see this *Bulletin*, Vol. 21, p. 327), who show a definite association between buccal cancer and betel-chewing in Ceylon, the writer says that in nearly 20 years' experience of practice in South Formosa, where betel-chewing is common, buccal cancer was comparatively rare. Of malignant diseases cancer of the cervix comes easily first, followed by the breast, penis, alimentary tract and skin. He asks whether this is racial immunity, or is there some unknown factor in betel-chewing that is operative in India and elsewhere, but not in China ? He refers also to the rarity of buccal cancer in betel-chewing Dutch East Indians (Snijders).

A. G. B.

Neve (Ernest F.). **Squamous Celled Epithelioma due to *Kangri* Burn.**—*Indian Med. Gaz.* 1924. July. Vol. 59. No. 7. pp. 341–344. With 5 text figs.

An account of Kangri-burn cancer by the same author was published recently in this *Bulletin* (*ante*, p. 326). It is, he thinks, due to simple heat, and he finds the temperature to which the skin is exposed to be between 150° and 200° F. Elderly Kashmiris have dry, scaly, usually pigmented patches not only on the irritated areas but also on extensor surfaces and on the back, and he suggests that heat irritation in one

area may stimulate epithelial growth elsewhere. The growths usually start from the scars of previous burns. During the past 35 years, 45 operations have been performed annually at the Kashmir Mission for kangri-burn cancer, as compared with 10 for other forms of cancer. The technique of the operation is described. The disease is very amenable to operative treatment and distant metastases do not occur.

A. G. B.

Trabaud. **Fièvre ondulante au cours d'une carcinose primitive du foie généralisée aux poumons.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1924. May 29. Year 40. 3rd Ser. No. 18. pp. 771–776. With 2 charts in text.

This is an extraordinary case of an Annamite sepoy, aged 28 years, admitted to hospital at Beirut, emaciated, with painful and extensive enlargement of the hepatic area, and a diagnosis of liver abscess. There was no history of dysentery and a course of emetine had no effect on either the condition or the temperature (which throughout the course of the illness was of remittent or intermittent type), and as also blood examination disclosed decided leucopenia with 8 per cent. of eosinophilia, the possibility of hydatid cyst was suspected. At an exploratory laparotomy, however, what was revealed was a much enlarged, non-adherent liver, with a superficial appearance of cirrhosis, but (on puncture) a lardaceous resistance, and some convolutions of a tumour showing on the under surface. The possibility of syphilis was then suggested, notwithstanding a negative WR, and an intravenous course of neosalvarsan was given, but without any effect. Emaciation, cachexia, and abdominal distension increased until, after a week of frequent attacks of abundant epistaxis, the patient expired, on the 86th day.

At autopsy the enormously enlarged liver weighed more than 15,000 gm. and the right lobe was occupied by an encapsuled tumour as big as a large foetal head with an appearance and consistence resembling brain ; 9 or 10 tumours of similar structure, and varying in size from a hazel-nut to a small apple, were found elsewhere in the liver, and many similar metastases, ranging in size from a grain of millet to a hazel nut, were present in the lungs but not in any other organ. Microscopic examination showed this tumour tissue to be extensively necrosed, but the less degenerate foci consisted of coils and strands of large polygonal cells—often monstrous and multinuclear—ramifying in a vascular meshwork. The author sums up the process as originally a typical trabecular adenoma, gradually spreading throughout the liver by way of the lymphatic channels, and then showered into the lungs as a " miliary carcinosis " by way of the bloodstream. The fever is attributed to toxic resorption of products of the extensive degeneration of the tissues.

A. A.

Jewell (N. P.). **Malignant Disease in the Negro Races.**—*Kenya Med. Jl.* 1924. June. Vol. 1. No. 3. p. 88.

Fewer cases of malignant disease are met with in natives in East Africa than in Europeans (1) because fewer natives of cancer age are seen ; the old people go back to the reserves ; (2) internal cancer is likely to be missed in dispensary work. Cancer of the cervix uteri might be found more often if vaginal examination were employed.

A. G. B.

CLEARKIN (P. A.). **Malignant Disease in Africans.** [Correspondence.] —*Kenya Med. Jl.* 1924. Aug. Vol. 1. No. 5. pp. 154–156.

In the years 1914–21 only two instances of malignant disease were recorded at the Nairobi Laboratory. In 1922–4 there were 14 such (5 carcinoma, 9 sarcoma). The large increase corresponds with the increase in the number of doctors working in the native reserves. The writer doubts whether cancer is much less frequent among Africans than among Europeans.

A. G. B.

MILLER (F. R. Lanfear). **A Case of Breast Carcinoma in an African.**—*Kenya Med. Jl.* 1924. May. Vol. 1. No. 2. p. 51.

A Nyangori female aged about 50 whose ulcerated breast was removed at Kisumu. Pectoralis major and infra-clavicular and axillary glands were implicated.

A. G. B.

ADAM. **Cancer de l'ovaire.**—*Bull. Soc. Path. Exot.* 1924. Apr. 9. Vol. 17. No. 4. pp. 330–333.

A large abdominal swelling in an African woman of 35 at Dakar proved to be due to inoperable cancer of the ovary, revealed at the operation and more closely examined after death.

A. G. B.

RAZETTI (L.). **El cancer en el Hospital Vargas.**—*Gac. Med. de Caracas.* 1924. Jan. 15. Vol. 31. No. 1. pp. 1–4.

In Venezuela during the years 1908 to 1912 inclusive there were 1,820 deaths from cancer, an average of 364 per annum, or 0·15 per thousand inhabitants. At the Vargas Hospital, between Jan. 1st, 1921, and Dec. 31st, 1923, there were 141 patients suffering from this disease, of whom 60 were males and 81 females. Of 53 who were operated upon 9 died—two each of cancer of the liver, the colon, the breast, the uterus, and one of the tongue—while 44 left hospital apparently free from the disease.

H. Harold Scott.

DE BOER (H. S.). **Some Notes on the Aetiology of Malignant Pustule in Kenya.**—*Kenya Med. Jl.* 1924. June. Vol. 1. No. 3. pp. 81–85.

Between March 27th and May 18th, 21 patients, all but one males, were admitted to hospital at Nairobi with cutaneous anthrax lesions. A table gives the position of the lesions, single in 12 cases, two or more in 8, and the history of infection. The author asks whether the infection is local through the skin, or the skin lesions part of a general infection. None showed any lesion of the internal organs and all recovered. No cultures were attempted from the blood. The author inclines to cutaneous infection but postulates a break in the skin surface. Five patients from one farm had lesions on or about the left shoulder, and it is suggested that they were carrying infected carcases. Dr. CALLANAN, who reported 40 cases, found the lesions of half of them on the left shoulder, arm, or breast, which are bare when, as is the rule, the blanket is fixed over the right shoulder. He believes infection to be carried by a Haematopota.

A. G. B.

Procter (R. A. W.); Callanan (J. C.). **Etiology of Anthrax.** [Correspoondence.]—*Kenya Med. Jl.* 1924. Aug. Vol. 1. No. 5. pp. 156–157.

Dr. Callanan considers that *Haematopota vittata* is a factor in the spread of anthrax among natives in his district, either from infection of the proboscis or by causing a slight abrasion through which the virus enters independently, as by the carrying of infected meat over the shoulder.

Dr. Procter's district, to the north, is free from Haematopota and he has seen 24 cases of anthrax among Somalis, men, women and children all actually engaged in herding cattle. The majority of the lesions were not situated on exposed parts. He thinks that anthrax is more probably spread by direct contact or by the agency of infected clothing; if by flies, other members of the tribe should have been infected.

A. G. B.

Maes (E.). **Un cas de charbon externe soigné uniquement par le novarsénobenzol en injection intra-veineuse. Guérison.**—*Rev. Méd. et Hyg. Trop.* 1924. Apr. Vol. 16. No. 4. pp. 115–117. With 1 chart.

A native of the French Soudan presented on the right cheek and forehead three pustules with deep oedema of the skin and right cervical adenitis; the lesions were three days old. Examination of the fluid from a pustule discovered anthrax bacilli. The next day the swelling had increased and the malignant pustule was typical—a central slough surrounded by a ring of vesicles. An intravenous injection of 0·3 gm. novarsenobenzol was given. Improvement was noted two days later, and after another two, the oedema and adenitis had vanished, the pustules were cicatrizing, and no bacilli could be found. The native considered himself cured and disappeared.

A. G. B.

Piccininni (F.) & Scaglione (G.). **Ricerche di patologia sperimentale sull' efficacia della proteino-terapia aspecifica nelle infezioni da carbonchio, peste e tifo.** [Aspecific Protein Therapy in Anthrax, Plague and Typhoid.]—*Riforma Med.* 1924. May 19. Vol. 40. No. 20. pp. 459–461. [27 refs.]

This is purely laboratory work and experiments on guineapigs. The aspecific proteins chosen for therapeutic use were milk and horse serum (pure, or containing diphtheritic anti-toxin). [The results are open to criticism, and we do not intend to discuss this work in detail. In any case we do not see much to encourage this treatment for human beings, especially when we possess more valuable therapeutic agents for plague and typhoid.]

J. H. Tull Walsh.

Treston (M. L.); Balfour (Andrew). **A Case for Diagnosis.**—*Jl. Trop. Med. & Hyg.* 1924. Apr. 1 & May 1. Vol. 27. Nos. 7 & 9. pp. 75; 108.

A Mussulman muleteer in Burma admitted to hospital with fever and loss of power in the lower extremities died 48 hours later. Anthrax bacilli were found in the cerebrospinal fluid.

Dr. Balfour gives four references to similar published cases.

A. G. B.

Presti-Seminerio (F. Lo). **Cinque casi d'infezione associata malaria-melitense.**—*Policlinico.* Sez. Prat. 1924. Aug. 11. Vol. 31. No. 32. pp. 1036–1038. [7 refs.]

The author, after referring to previous records of the association of undulant fever with typhoid and paratyphoid B, and with kala azar, briefly relates five cases in which the same disease was found in association with malaria, three with benign tertian and two with quartan. In one instance protein- and vaccine-therapy were employed, but in the others administration of quinine only is recorded. The undulant fever was diagnosed by agglutination, the titre being 1 : 200 in four instances, 1 : 500 in the fifth. [What effect the malaria had on the course and character of the other disease is not stated.]

H. Harold Scott.

Dock (William). **Intermittent Fever of Seven Months' Duration due to Meningococcemia (with an Analysis of Sixty-Eight reported Cases of Meningococcemia).**—*Jl. Amer. Med. Assoc.* 1924. July 5. Vol. 83. No. 1. pp. 31–33. [6 refs.]

This case was one of those which simulate malaria. The patient for long periods had fever every third and occasionally every fourth day. Other symptoms were a recurrent rash, headache and joint pains. Sixty eight cases of meningococcaemia have been reported. In 49 fever was intermittent daily, two-day cycles occurred repeatedly in 37, three-day cycles in 21, and four-day cycles occasionally in 3. Only 4 of the tertian or quartan recurrences were unmixed with quotidian. The meninococci may be isolated from the blood in ascitic broth. Such infections should be treated intensively with polyvalent antimeningococcus serum.

A. G. B.

Piga. **La radioexcitación en las enfermedades infecciosas y parasitarias.**—*Siglo Méd.* 1924. July 26. Year 71. Vol. 74. No. 3685. pp. 87–89. [1 ref.]

This paper was read before the Academy of Medicine at Madrid. The author states that the use of X-rays in one-third or less of the dose sufficient to cause cutaneous erythema has proved very effective in malaria, tuberculosis and typhoid fever. The types of malaria most benefited are, in that order, subtertian, benign tertian, quartan and chronic. No precise details as to the method of employment are given.

H. Harold Scott.

Amaya (Carlos A.). **Fiebre recurrente y paludismo agudo. Necesidad de un diagnóstico rápido.**—*Repert. Med. y Cirug.* Bogotá. 1924. June. Vol. 15. No. 9. (No. 177.) pp. 449–458.

Six cases are recorded presenting similar symptoms of high fever with rigor, and, in some, vomiting and convulsions. Treatment with quinine being ineffectual in three of the patients the blood was examined and the spirochaete of relapsing fever found. Injection of 10 cgm. of neosalvarsan brought about a cure. The cases are reported in order to point out the necessity for early blood examination in such conditions and to warn against the prevailing custom of regarding them all as malarial.

H. Harold Scott.

WAMPLER (F. J.). **Osteomalacia in China.**—*China Med. Jl.* 1924. May. Vol. 38. No. 5. pp. 349–357. [8 refs.]

Osteomalacia is very prevalent in central Shansi. Six villages and two suburbs of Ping Ting Chow were thoroughly canvassed. Of 3,536 women and girls of the suburbs 35 were affected, and many light cases were found not to have been reported. The author estimates that among the adult women in the suburbs the incidence is 1 in 45, and in the farming villages 1 in 173. The disease is more prevalent among the upper and middle classes than among the poor. It attacks women who get little exercise and little sunshine. It is described as a "lazy women's disease." The author has studied 46 cases.

"Among some of the outstanding features of this careful study it was found that more than 75 per cent. of patients with osteomalacia had tetany; 28 per cent. had a positive Chvostec; in 31 per cent. the disease began during pregnancy, and in 39 per cent. during the nursing period; one-third of the cases reported oedema over the affected parts; 80 per cent. of the patients were worse in winter and spring; in 39 per cent. the teeth were painful and loose. The dental symptoms disappear when the general osseous condition improves. . . . Out of a total of 130 children born to osteomalacic mothers, only 54 are living. In five cases the disease commenced before menstruation began; in one case six years before, and in another four years. . . . Four patients are entirely well. Three of them got well after Caesarian section. In no case was oöphorectomy or tying off the tubes performed. In one case the cure was spontaneous. In the first general survey we have records of at least eight other spontaneous cures."

In several families there were two or more cases. Details are given of the diet. It is described as very deficient in calories and very poorly balanced from the chemical as well as the vitamin standpoints. The aetiology is discussed at some length and reference is made to the paper by HUTCHINSON and PATEL [this *Bulletin*, Vol. 18, p. 298], who opined that lack of fresh air and exercise was by far the most potent factor of causation in Bombay. The author would assign the disease to a fault of diet. The frequent occurrence of tetany suggests a lack of calcium. He has had good results with treatment by cod-liver oil and calcium lactate or phosphate; no patient taking this treatment failed to report progress after two months.

A. G. B.

LANDON (E.). **Osteomalacia and Sprue.** [Correspondence.]—*Jl. Assoc. Med. Women in India.* 1924. May. Vol. 12. No. 2. pp. 37–38.

On the assumption that osteomalacia is directly due to some defect in calcium metabolism, the suggestion is made that the condition might be treated successfully by the method introduced by SCOTT for the treatment of sprue.

A. A.

MORTIAUX (C.). **Intoxication par les Graines de Ricin.**—*Ann. Soc. Belge de Méd. Trop.* Brussels. 1924. Jan. Vol. 3, No. 3. pp. 239–240.

Seven persons who had eaten a varying number (5–18) of castor oil seeds were taken with intractable vomiting and choleriform diarrhoea. For two days they could not keep even water down. Recovery was rapid except in the case in which 18 seeds had been taken. This

patient died ten days later after some days' heart weakness with cyanosis and loss of power in the limbs. The ricin of the seed is believed to have an action on the heart and motor nerve terminations. The seeds or oil cake are known to be very poisonous; according to RICHAUD three or four seeds are enough to kill a child.

A. G. B.

SWARUP (Anand). **Poisonous Wheat.** — *Indian Med. Gaz.* 1924. Apr. Vol. 59. No. 4. pp. 186–187.

An account of a train of symptoms in two families suggesting poisoning, and following the ingestion of flour recently obtained from the bazaar. A sample was to be sent to the School of Tropical Medicine, Calcutta. The chief symptoms were vomiting, giddiness and tremors (*cf.* this *Bulletin*, Vol. 20, p. 676).

A. G. B.

PHELPS (B. M.) & HU (C. H.). **Carbon Tetrachlorid Poisoning: Report of Two Fatal Cases and a Series of Animal Experiments.** — *Jl. Amer. Med. Assoc.* 1924. Apr. 19. Vol. 82. No. 16. pp. 1254–1256. [6 refs.]

In two fatal cases of carbon tetrachloride poisoning, in persons of 5 and 46 years, the chief finding was central necrosis of the liver. In one case the suprarenal glands showed necrosis of the cortical cells; in the first the glands were not preserved. The drug caused central necrosis of the liver and necrosis of the suprarenal cortex in guinea-pigs. Regeneration of liver cells in these animals after central necrosis is very rapid; after 40 hours evidence of regeneration is prominent; after 8 days it is complete. The symptoms following ingestion of the drug in human cases are probably associated with the presence of central necrosis of the liver, and the absence of this lesion in reported cases is probably due to rapid regeneration of the liver cells. It is pointed out that similar lesions of these two viscera are characteristic of poisoning by the allied substance, chloroform.

A. G. B.

HÖPPLI (R.) & KESSLER (A.). **Zur Frage der Giftigkeit von Tetrachlorkohlenstoff.** The Toxicity of Carbon Tetrachloride. — *Arch. f. Schiffs- u. Trop.-Hyg.* 1924. May. Vol. 28. No. 5. pp. 205–210. [3 refs.]

Four dogs of 7 weeks treated for worms with unpurified carbon tetrachloride and with oil of chenopodium, a single dose of each, died a few days later. The livers showed cell necrosis at the centre of the acini, and in 3 instances degeneration of the renal epithelium (*cf.* MEYER and PESSOA, this *Bulletin*, Vol. 20, p. 257). There was no reason to think that the oil of chenopodium caused death or these changes. A dog treated with pure carbon tetrachloride, 5 doses of 3·3 cc., 16·5 cc. in all, did not develop symptoms; it was killed, and similar changes were found in liver and kidneys, which seemed to show that these lesions were not due to impurities. Another dog which received carbon bisulphide showed diffuse degeneration of liver cells and not central necrotic foci. Kessler, the chemist, says that the unpurified samples contained carbon bisulphide, and he gives the chemical tests for this substance and for benzol and phosgene, other possible impurities.

A. G. B.

Dale (H. H.). **The Purity of Carbon Tetrachloride.** [Correspondence.] —*Brit. Med. Jl.* 1924. July 26. p. 160.

Lamson and others (*ante*, p. 411) have shown that large doses of carbon tetrachloride may be given with impunity to dogs, as it is practically not absorbed from the alimentary canal, but that in the presence of fat or alochol there is danger of absorption and poisoning. Dr. Charles Todd, of Cairo, finds that bad symptoms are traceable to an impurity which proves to be carbon bisulphide. All therefore who order carbon tetrachloride for internal administration are advised to stipulate that it shall be *free from sulphur*, and to test each consignment. A simple test is the copper xanthate test described in the B.P. Codex.

A. G. B.

v. Liebenstein. **Ein Fall von Vergiftung mit Oleum Chenopodii.** [A Case of Chenopodium Poisoning.]—*Med. Klin.* 1924. May 11. Vol. 20. No. 19. pp. 642–643.

An ill-nourished and anaemic woman of 28 had taken in mistake for castor oil 4 capsules of "Chenoposan," corresponding to 2 gm. oil of chenopodium. Fifteen minutes later there was burning of the hands and nausea, followed by faintness; after 2 hours dimness of vision was complained of; after 10 hours the sight was normal but deafness was almost complete, with much tinnitus. Later the respiration was irregular, the pulse infrequent and of low tension. Noises in the ears and deafness persisted for 6 weeks and had not quite disappeared after 5 months. Another well-nourished patient took the same dose without any untoward symptoms. The author refers to Roth's paper (see this *Bulletin*, Vol. 20, p. 258).

A. G. B.

Chopra (R. N.) in collaboration with Ghosh (B. N.) & De (Premanker). **Some Observations on the Toxicity of Emetine.**— *Indian Med. Gaz.* 1924. July. Vol. 59. No. 7. pp. 338–341. [6 refs.]

By a series of experiments on rabbits in which 1 mgm. for each kilo body weight was injected intramuscularly the authors showed that emetine is a general protoplasmic poison having a selective action on the cells of certain organs; that the parenchyma of the heart muscle is affected early, the changes being cloudy swelling, then shrinking, and finally atrophy of the muscle fibres; that the drug acts on the endothelium of the capillaries, producing petechiae at the site of injection; and that liver and kidneys are affected later. At the Carmichael Hospital, Calcutta, the practice is to give a saline purgative followed by 6 injections of one grain of emetine hydrochloride combined with 2 to 3 drachms of bismuth subnitrate or carbonate by the mouth, three times a day. Three days' rest is succeeded by 3 more injections. The bismuth salts alter the acidity of the gut contents, probably by fixing the free acids, and emetine has been shown to act best in an alkaline medium (this *Bulletin*, Vol. 20, pp. 781–2). The association with bismuth reduces the number of emetine injections required.

A. G. B.

Arkwright (J. A.). **The Position of Rickettsia as an Aetiological Factor in Disease.**—*Jl. Roy. Army Med. Corps.* 1924. June. Vol. 42. No. 6. pp. 447–452. [8 refs.]

In this paper the proposition that each Rickettsia disease is associated exclusively with a particular virus and a distinguishable kind of Rickettsia body is separated from the proposition that Rickettsia bodies are living organisms, though both propositions are equally upheld.

As regards the first proposition, well-established facts in the history of Rocky Mountain Fever and *Dermocentroxenus rickettsii* and of Typhus and *Rickettsia prowazeki*, upon which it is based, are recounted, along with a brief dissenting notice of the theory that *Rickettsia prowazeki* is the form assumed by *Bacillus proteus X* in the louse.

In dealing with the second proposition attention is concentrated on Woodcock's theory of haemetaboly (see this *Bulletin*, Vol. 19, p. 620), according to which Rickettsia bodies in general are merely organic detritus (chiefly of red blood corpuscles and nuclei of cells) and the Rickettsia bodies found in lice infested with typhus and trench fever are not different from those found in normal lice.

Although several workers claim to have cultivated the Rickettsia of infected lice on special media, the author admits that these bodies "cannot with any certainty be cultivated in artificial media," and therefore that their position in the cosmos must, for the present, be judged from their appearance in stained films and sections. As concerns *R. prowazeki* and *R. quintana* (the body associated with trench fever) believers in the theory that they are specific micro-organisms distinguish them by their "different range of morphology in the two diseases" and by the fact that in the louse the former is found inside the cells of the gut, and the latter in the lumen of the gut. Woodcock does not entirely deny that such differences of size and location can be verified, but he assigns them to the action of two viruses which have different effects upon the digestive processes and products of the louse. For the present, the author appears to be content with the acknowledgment of two distinct viruses, each associated with a distinct type of Rickettsia recognizable in films preserved in the Lister Institute collections. While admitting that the matter is still in question, he inclines to the opinion that Rickettsia is a micro-organism, and he thinks that this opinion is strengthened by the fact that specific agglutinins have been obtained from lice (or ticks), infected severally with typhus, Rocky Mountain fever, and trench fever, whereas Ledingham was unable to cause the appearance of antibodies from normal lice.

A. A.

Woodcock (H. M.). **Ferment-Viruses and Pathological Haemetaboly.** [Correspondence.]—*Jl. Roy. Army Med. Corps.* 1924. June. Vol. 42. No. 6. pp. 469–470.

Woodcock sees in an opinion expressed in a paper by Doerr and Zdansky (*Zeitschr. Hyg.* 1924, p. 102) touching the cause of encephalitis lethargica, that the conception of a living microbial virus as a necessary cause of a contagious disease is too absolute, a corroboration of his theory (see this *Bulletin*, Vol. 19, p. 620, and Vol. 20, pp. 676, 677) that a virus may be an inanimate entity—ferment, cytotoxin—produced during the destructive action of a micro organism on tissue-cells but transmissible independently of the micro-organism. The invisible cytotoxin—an "ultramicroscopic"

virus—and the visible microscopic detritus of the cells or, rather their nuclei are co-existent for the time being, and thus on Woodcock's theory the pathological significance of Rickettsia bodies is to be explained. Further, regarding the alleged cultivation of Rickettsia bodies by Wolbach and Schlesinger *loc. cit.* p. 664), Woodcock takes this opportunity of asking how, if, as is stated, Rickettsia bodies were found only in cells of the culture, never in the plasma, and the Rickettsia-infected cells of the culture died—How in such circumstances did the Rickettsia bodies, unable to pass from cell to cell, manage to maintain and reproduce themselves; or, alternatively, how could infected and dying cells thrive and multiply?

A. A.

Castellani (Aldo). **Medical Mycology.**—*Jl. Trop. Med. & Hyg.* 1924. Mar. 1. & 15. Vol. 27. Nos. 5 & 6. pp. 49–53; 61–65.

These are the first two instalments of an amplification of a paper read at the 1923 Meeting of the British Medical Association. After commenting on the little attention now given to the higher fungi by pathologists and emphasizing the facts that the higher fungi were recognised in pathology in 1839 long before anything was definitely known about bacteria, and that they now have an important status in tropical medicine, the author commences with a classification of the fungi and proceeds to illustrate in some detail his mycological method for the identification of sugars and other carbon compounds. This method, it is incidentally mentioned, is also of practical use in the analysis of urine, especially in the detection of glucose, laevulose, maltose, galactose, lactose, and pentoses. He then starts upon the higher fungi as pathogenic agents in man, and proposes a limitation of the subject to thrush, bronchomycoses, tonsillomycoses, and certain external mycoses. Beginning with thrush, he catalogues 17 species, included in 6 genera, which he regards as causative of the disease, and describes briefly the discrimination of each by its fermentive characters towards sugar.

A. A.

Delamare (G.), Djémil (Saïd) & Architouv. **Spirochétose caecale, scorbut expérimental et mélaena.**—*Bull. Acad. Méd.* 1924. Apr. 8. Year 88. 3rd Ser. Vol. 91. No. 15. pp. 462–463. With 1 text fig. [1 ref.]

In favour of a relation between certain dietetic deficiencies and proliferation of intestinal spirochaetes the authors cite (1) the relatively large number of cases of intestinal spirochaetosis observed at the close of the war, when great numbers of people were underfed; (2) their frequency in chronic amoebiasis in which nutrition is often defective; (3) the fact that prescorbutic changes in the gums seem to offer a favourable field for Vincent's symbiosis. However, in 400 Anatolian refugees suffering from symptoms attributable to avitaminosis the authors could find no trace of intestinal spirochaetosis. In two instances out of fifteen, caecal spirochaetosis was found in scorbutic guinea-pigs in which haemorrhages had taken place in the caecum, but it is considered that the spirochaetes were saprophytic. It is concluded that in addition to cases in which melaena appears as a probable consequence of spirochaetosis there are those in which the spirochaetosis is secondary to the haemorrhage, and the like distinction is to be made between bronchospirochaetosis (Castellani) and secondary

spirochaetosis developing in blood of haemoptysic origin; such spirochaetosis does not give rise to lesions or physical signs and does not require treatment.

A. G. B.

Mattlet (G.). **Recherches au sujet de deux races de bacille pyocyanique.**— *Ann. Soc. Belge de Méd. Trop.* Brussels, 1924. Jan. Vol. 3. No. 3. pp. 337–345.

The strains of *B. pyocyaneus* were isolated from abscesses and fistulae in natives of Urundi, Belgian East Africa. It was noted that the abscesses had little tendency to penetrate the skin. Two races were identified with the E and S strains of Gessard differing in their action on sugars and in the production of sulphuretted hydrogen. Full details are given of the cultural characters, biochemical properties, action on sugars, and proteolytic action.

A. G. B.

van den Branden (F.) & van Hoof (L.). **Observations cliniques.**— *Ann. Soc. Belge de Méd. Trop.* Brussels. 1924. Jan. Vol. 3. No. 3. pp. 325–326. [3 refs.]

1. A negro child aged 10 with spina ventosa and yaws lesions on the soles. A radiogram of the upper limb revealed lesions of osteitis and periostitis in the phalanx of the middle finger and in the lower third of the ulna. Recovery was complete after sulfarsenol and novarsenobenzol treatment.

2. A case of club foot in a young negress.

3. A case of herpes zoster in a negress, a rare affection at Stanley Pool. There was a strong Bordet-Wassermann reaction, and the lesions disappeared after arsenical treatment.

4. A case of lichen in a young negro. Syphilis and yaws and mycosis were excluded. The affection disappeared spontaneously after three months.

A. G. B.

Van Nitsen (R.). **Le rôle de l'association fuso-spirillaire dans la pathogénie de certaines affections tropicales.**— *Ann. Soc. Belge de Méd. Trop.* Brussels. 1924. Jan. Vol. 3. No. 3. pp. 317–324. [8 refs.]

Vincent's spirochaete and the fusiform bacillus are saprophytes in the mouth and alimentary canal. They are found in 50 per cent. of smears from the pharynx and in about 20 per cent. of stools of healthy natives. Their presence is the rule in certain affections of the skin, mouth, pharynx, respiratory passages and digestive tube. To give details, they are found almost constantly in phagedenic or tropical ulcer and prexisting lesions which they invade are infected burns of the arms and legs; eczematous ulcers of the feet; ulcerations of the feet the result of chigger invasion; ulcerative lesions of tertiary yaws. Hence the phagedenic character, which may lead to extensive necrosis of bone. Such conditions in the mouth are, mercurial gingivitis, scorbutic gingivitis, erosion and perforation of the palate, dental abscesses, simple angina, membranous angina, extensive ulceration of the face (see this *Bulletin, ante*, p. 9). As to the respiratory tract, examination of sputa at Panda in 1922 revealed this association

in 87 out of 169 bronchitics and 66 out of 137 pneumonia cases, *i.e.*, 50 per cent. in all. Figures are given for the digestive tube, in diarrhoea, dysentery and typhoid.

The author asks, what is the relation between these various affections in which this association of organisms is found? There seems no doubt that as regards hospital gangrene, noma, ulcero-membranous angina, tropical ulcer, and Castellani's bronchitis the association is the one described by VINCENT.

The origin of the organisms in the intestine is more obscure. The obvious suggestion that they come from the mouth is supported by the report of BOUCHET and LEROUX of intestinal symptoms consecutive to Vincent's angina. Moreover, the authors found the organisms in the stools in 50 per cent. of bronchitis cases and 49 per cent. of phagedenic ulcer cases, whereas the proportion in the stools of healthy natives was but 20 per cent. Soiled fingers would carry them from ulcer to mouth. They have never been found in blood or urine.

Whereas these organisms are few in the digestive tract and respiratory ways of healthy natives, in pathological states they multiply rapidly. They may increase to such a point as to form inextricable bundles of spirochaetes and bacilli. The chief causes of this multiplication are, according to the author, association with other microbes and influence of terrain. Studying the organisms found in tropical ulcer the author was struck by the fact that in all serious cases, in full development and frankly phagedenic, there were found diplococci as well as spirochaetes and fusiform bacilli, and he suggests that the presence of the diplococci enables the association to get a footing and grow. In affections of the mouth and respiratory channels there are other organisms present, and it has been observed that certain forms of dysentery are more favourable than others. Thus, DE LAVERGNE found the association in 76 per cent. of his amoebiasis cases but was unable to discover it in 7 bacillary cases (this *Bulletin*, Vol. 19, p. 705). The author was successful in 17 per cent. of 69 cases of bacillary dysentery, but 20 per cent. is the proportion for normal stools, and in the amoebic cases the organisms were found in much greater numbers. Other intestinal parasites seem to favour the association; such are lamblia, trichomonas, ancylostomes, ascaris, taenia, *Schistosoma mansoni* and typhoid fever.

As to the influence of terrain Vincent's spirochaete cannot establish itself in healthy skin or aseptic wounds, but if the integuments are crushed or injured by caustic potash a phagedenic ulcer will develop. The vitality of the tissues must be impaired. This accounts for the conditions of the mouth, respiratory ways, and intestine mentioned already in which the symbiosis flourishes. The worse the general condition the greater the receptiveness to the symbiosis. Tropical ulcer is a disease of the poor and the poorly nourished.

Two cases are cited of phagedenic ulceration of the face due to this association starting in dental caries and developing in very debilitated subjects. These were neither noma, gangosa, syphilis, leishmaniasis, nor blastomycosis.

A. G. B.

IRVINE (A. C.). **Pyorrhoea in Natives.**—*Kenya Med. Jl.* 1924. June. Vol. 1. No. 3. p. 87.

Amongst Mwimbi natives (East Kenya) presenting themselves at hospital 70 per cent. had definite pyorrhoea with bleeding spongy

retracted gums and pus formation ; and the same was the proportion in men presenting themselves for work. Half of those free from pyorrhoea showed spongy gums and retraction. These natives live on beer and gruel and eat no hard food.

A. G. B.

Le Dantec (A.). **Les maladies varioliformes exotiques (Alastrim, Amaas, Foué-foué).**— *Jl. Méd. de Bordeaux.* 1924. May 10. Vol. 101. No. 9. pp. 335–340. With 2 figs.

Apropos of a case of varioloid in a Martiniquian sailor who landed at Bordeaux and was sent to a general hospital with the diagnosis " alastrim " the author discusses the diseases named alastrim, amaas, foué-foué and " endémie varioliforme de Stanley Pool," and considers their relation to smallpox. Alastrim was first reported in the coffee plantations of São Paulo, and there were warm discussions as to its identity or non-identity with smallpox. During the dispute, no sanitary barrier being opposed, it invaded most of the islands of the Antilles. Amaas is a term of South African origin, which first appeared in the literature in 1904. Foué-foué is the native name of a similar disease which in 1900 was seen in the forest region of the French Soudan. Lastly, " endémie varioliforme de Stanley Pool " was described in 1923 by Van Hoof [but see this *Bulletin*, *ante*, p. 845, where the disease is called alastrim].

The author considers the arguments of the unicists and dualists. He admits that, the nature of the virus of smallpox itself being unknown, the question cannot be scientifically settled, and states that Paul's reaction is not absolutely specific ; he claims that the properties of mildness and malignancy form too slight a base for separation, and points to the virus of plague which may kill everyone attacked, as in Manchuria, or be comparatively benign, as in Paris in 1920 ; the history of smallpox reveals epidemics of diverse virulence. Finally he lays down : In the present state of knowledge any varioliform disease which can be combated effectively by vaccination ought to be regarded as variola. Inversely, any varioliform disease which is not prevented by vaccination is not variola. And he points out that the difference which to-day separates the partisans of identity or non-identity of alastrim and smallpox is the same as that which 100 years ago separated the partisans of identity or non-identity of variola and varicella ; the deciding factor was the success of vaccination. Similarly, the veterinarians separated sheep-pox from cow-pox, by the vaccination test. In proof of the effectiveness of vaccination in alastrim he quotes Baujean (*ante*, p. 329). The term alastrim ought to disappear.

A. G. B.

i. Blanc (Georges) & Caillon (Louis). **Sur une mycose aspergillaire observée en Tunisie.** -*Bull. Soc. Path. Exot.* 1924. May 14. Vol. 17. No. 5. pp. 243–345. With 1 fig.

ii. Langeron (Maurice). **Un *Sterigmatocystis* nouveau, parasite de l'homme en Tunisie : *S. tunetana* n.sp.**— *Ibid.* pp. 345–347. With 1 fig. [3 refs.]

i. The authors describe an ulcerated tumour, about the dimensions of a five-franc piece, gradually developed in the course of a year on the back of the hand of a Tunisian of 60 years. It began as two small nodules and was never very painful. The arm was considerably atrophied, the epitrochlear gland was as big as a pigeon-egg and the

axillary and subclavicular glands also were enlarged. No "grains" or mycelial fragments were observed; but from the serum, and afterwards from the enucleated tumour, an aspergillus was isolated which the authors—though well advised of the need for caution in making such an inference—regard as being the pathogenetic agent. The patient was submitted to a stiff iodide treatment, but made an unceremonious departure from hospital.

ii. The aspergillus of the above case is here described and figured as a new species, *tunetana*, of the genus *Sterigmatocystis*. It is near to *S. versicolor* and also to *S. bicolor*, but has peculiarities of size as well as of mode of colour evolution. The colonies are at first a downy white and then, with the appearance of the conidia, a greenish blue; later, ochreous spots show, and finally the whole colony assumes a dark, tawny-orange tint.

A. A.

VERBRYCKE (J. Russell). **Tularemia: with Report of Fatal Case simulating Cholangeitis, with Postmortem Report.**—*Jl. Amer. Med. Assoc.* 1924. May 17. Vol. 82. No. 20. pp. 1577–1581. With 7 figs. [7 refs.]

The patient in this interesting and admonitory case was a widow of 67, of excellent health but with a history of recurring acute attacks of indigestion up to ten years before a present sudden onset of fever. Seen a few hours after that onset she had a temperature of 103° F., and was deeply jaundiced. Though there was no pain or abdominal tenderness, the symptoms, along with the old history, justified a diagnosis of acute inflammation of the bile-ducts. At the end of the 3rd day the temperature fell to normal, but rose again and thereafter continued from 102°–104° F. in the evening with a remission in the morning. There was slight albuminuria, and three successive counts gave 12,000, 15,400 and 19,200 leucocytes. An operation was proposed, and was performed on the 12th day. Nothing was found wrong, so the abdomen was closed and the diagnosis repudiated. At a final examination a little before the operation a thing that looked like a blood-blister had been noticed on the right index-finger, and while the patient was still under the anaesthetic this was incidentally attended to and found to cover a slough about as big as a sixpence. The idea of tularaemia then occurred to the author in the last resort, but the patient could not remember any dealings with rabbits within an interval of 8 months from her illness, when she certainly had kept animals supposed to be rabbits. As blood examinations, blood-cultures, and ordinary serum-tests supplied no information, serum was sent to Dr. FRANCIS for the agglutination test; but before the positive verdict was returned the patient had succumbed—on the 18th day of illness.

At the post mortem examination nodules ranging in size from a shot to a walnut were found in the lungs; and the spleen was enlarged, almost fluid, and full of little yellowish-white miliary points pronounced by Dr. FRANCIS to be exactly like those seen in tularaemia rabbits. Laboratory animals inoculated from the spleen died in four days, with typical tularaemia lesions at necropsy and yielding the tularaemia bacillus.

Subsequently it was remembered that 5 days before the patient felt ill she had skinned, dressed, and cooked a pair of rabbits, and 2 days after that had got a splinter into her right index finger.

A. A.

Vampré (Eyobras). **Contributo allo studio del "mal de engasgo." (Disfagia da spasmo del cardias.)** [Contribution to the Study of Endemic Dysphagia.]—*Policlinico.* Sez. Med. 1924. May 1. Vol. 31. No. 5. pp. 279–292.

This paper constitutes a summary of the condition known as "Mal de Engasgo"; this has many synonyms, of which "cardiospasm" appears to be the most descriptive. The chief symptom is an intermittent contraction of the lower end of the oesophagus leading to secondary dilatation above it. The question has been dealt with previously in this *Bulletin* (Vol. 18, p. 301) and the present paper does not contribute any new facts. The author supports the idea of a parasitic origin, because of its endemic prevalence, although no causative organism has yet been found. Heller's operation—section of the circular muscular fibres of the cardiac end of the oesophagus by two opposite longitudinal incisions—is said to be completely successful in effecting a cure.

H. Harold Scott.

Pittaluga. **Dos casos de tripanosomiasis y uno de kala-azar infantil.**—*La Medicina Ibera.* Madrid. 1923. Apr. 21. No. 285. p. 343. (Real Academia Nacional de Medecina. Section 7 April 1923.) [Summarized in *Arch. f. Schiffs- u. Trop.-Hyg.* 1923. Vol. 27. No. 12. p. 454.]

Two Europeans, with trypanosomiasis contracted in Fernando Po, were treated with Bayer 205 with complete success. One received in all 17 gm. He had slight albuminuria after the second injection and a relapse 14 days after the third. The initial dose was 0·5 gm., raised later to 1·25 gm. A case of kala azar in a 6-year-old child was treated with "Stibenyl Heyden," given intravenously on alternate days. The spleen swelling was reduced by more than half. This disease is common in Spain in the interior as well as on the Mediterranean coast and contributes notably to the child mortality.

A. G. B.

Tirumurti (T. S.). *Rhinosporidium seeberi* (*Kinealyi*) **in a Malabar Woman.**—*Lancet.* 1924. Apr. 19. p. 802.

The author is of opinion that the infrequency of recorded cases of Rhinosporidium infection in women—this appears to be the first case in his own experience—is merely the result of non-observation, or, rather, of infrequency of microscopic examination. The case here recorded is a typical case of long anterior (twenty years) initiation and frequent recurrence, or, rather, persistence in spite of serious operations for removal. The patient is still under treatment with local applications of tartar emetic.

A. A.

Forsyth (W. Leonard). **Rhinosporidium Kinealyi.** *Lancet.* 1924. May 10. pp. 951–952. With 2 text figs.

The tumour started fifteen years back in the left nares, and persisted there until 3 months before the patient's admission, when it disappeared spontaneously; but fresh growths then appeared in the adjacent lachrymal sac, lower eyelid (subcutaneous and subconjunctival) and malar region. The patient came from Calicut, Malabar.

A. A.

Sazerac (R.) & Vaurs (R.). **Du rôle de la phagocytose dans l'action du bismuth sur les trypanosomes et les spirochètes.**—*C. R. Soc. Biol.* 1924. July 18. Vol. 91. No. 25. pp. 430–432. [2 refs.]

The experimental observations of the authors are to the effect that insoluble bismuth when injected in suspension into the peritoneal cavity of laboratory rodents is visibly phagocyted, particularly by the large mononuclears, the number of which is greatly increased locally. With a non-toxic dose the process continues for about 10 days. The phagocytes, it is assumed, must dissolve the metallic granules and discharge the solution. Probably the same process of engulfment and diffusion by phagocytes occurs when insoluble bismuth salts are injected into muscle or subcutaneously.

A. A.

Ribón (D. Victor). **El yagé. (Memorándum de viaje, por Joaquin Rocha, regiones amazónicas 1905, casa editorial de "El Mercurio.")** —*Siglo Med.* 1924. May 31. Year 71. Vol. 73. No. 3677. pp. 542–543.

Yagé is the name given to a drink prepared by the natives from a small shrub. It is used as a purgative but is not devoid of danger, since it may produce symptoms similar to those of *Cannabis indica*. The period of "delectable visions" is short and rapidly gives place to delirium and terror. The author relates an instance in which a man took a dose for its purgative effects and passed into a maniacal condition, "howling like a dog, bellowing like a bull, crouching like a tiger, and believing himself transformed into one of the feline race." Individual susceptibility to the effects is very variable.

H. Harold Scott.

Blanchard (M.) & Laigret (J.). **L'innocuité complète de la ponction lombaire chez les indigènes du Congo.** –*Presse Méd.* 1924. June 14. Vol. 32. No. 48. pp. 518–519.

For about 15 years lumbar puncture has been frequently performed at the Brazzaville Pasteur Institute for the diagnosis of sleeping sickness, and especially in the last five, now that it has become the only certain test of the result of treatment. In 1923 there were 1,542 punctures. With the patient seated, 10-20 cc. are withdrawn slowly through a needle of large calibre. He then walks away and resumes his task. Native infirmières are not always strict about asepsis, and many of the patients are suffering from intercurrent affections, sometimes septicaemic, but no accident has ever occurred. Post-puncture headache is unknown. The patients are seen weekly, or more often, and no symptom, either early or late, attributable to the puncture has ever been observed. The authors ask if this is due to the same cause as the harmlessness of arsenobenzol. Very many injections have been given for sleeping sickness (first stage), for yaws, for relapsing fever, 0·6 to 0·9 gm., but with never a bad symptom. Alcoholism apart, it is the more sophisticated persons that suffer from after effects.

A. G. B.

Visco (Sabato). **Osservazioni sull' alimentazione esclusiva e prolungata dei ratti con semi di** *Lathyrus Sativus,* [Observations on the Effect of Prolonged Feeding of Rats on the Seeds of *Lathyrus sativus* exclusively.]—*Arch. Farmacol. sperim. e Science affini.* 1924. June 1 & 15. Year 23. Vol. 37. Nos. 11 & 12. pp. 269–272; 273–277.

Liotto, after observing for 6 weeks adult white rats fed exclusively on flour made from *Lathyrus sativus*, drew the following conclusions :— (1) That such a diet did not give rise to any particular morbid changes in such animals ; (2) That storage of nitrogen ran parallel with the body-weight, an indication that Lathyrus contains proteins of high nutritive value.

Seeing that, in man, symptoms of paraplegia often do not declare themselves for 7–10 weeks, the author repeated these experiments, keeping up his observations for four months, but could detect no harmful effects. He then repeated the tests with *young* rats. He separated them into two groups of four (each of 3 males and 1 female), and fed one group on bread and milk, and the other on the Lathyrus exclusively. No paralytic symptoms developed in the latter, but it was noticed that the gain in weight was considerably less. Whereas the three males fed on bread and milk increased in the first 74 days 118, 110, and 106 per cent. respectively, and the female 82 per cent., of those fed on Lathyrus flour, the gain in the males was 68, 49, and 23, and in the female 37 per cent. The difference in growth is ascribed to deficiency of vitamin A in Lathyrus as compared with the bread and milk.

H. Harold Scott.

Barthelemi (V.). **L'âge de la puberté chez les jeunes filles nègres.**—*Ann. Soc. Belge de Méd. Trop.* 1924. Jan. Vol. 3. No. 3. pp. 263–272.

The author examined the girls of 324 families, 373 in all, belonging to Lusambo and its neighbourhood ; 175 were between 10 and 20 years of age. In only 11 cases could he get the exact age ; in the rest, it was estimated from the recollection of the parents of events contemporary with the birth. He relied on the appearance of the breasts, of which he lists 5 stages, and measurements of the pelvis of girl and mother ; a vaginal examination was made in three instances.

Tables for the girls of known and estimated age show the state of the breasts, height, chest measurements, "envergure" [spread of arms?], pelvic measurements in some instances, and information as to the onset of puberty, appearance of hair on pubes and axilla, menstruation. The conclusion is that the development of the generative function in negroes is by no means as early as has been maintained, that puberty in the black female normally begins with the 15th year, and that it is only between the 16th and 17th year that she can be considered as marriageable. Rodhain, with reservations on the accuracy of the ages of many of the girls, concurred in the author's conclusions.

A. G. B.

Foster (John H.). **A Study of the Vital Capacity in Chinese.**—*China Med. Jl.* 1924. Apr. Vol. 38. No. 4. pp. 285–294. With 4 charts in text. [14 refs.]

The vital capacity of the lungs (measured by various spirometers) is defined by Howell as " the volume of air that can be breathed out by the deepest possible expiration after making the deepest possible inspiration." The normal standard is commonly expressed in relation to height (Hutchinson) or relation to body surface (West) ; but it has also been investigated in relation to weight and chest-volume, which are regarded as less reliable. The author, who considers that the determination of vital capacity should be included in the routine of physical examinations and be part of the clinical record in cardiac and pulmonary disease, has investigated and here recorded the normal vital capacity of 500 healthy Chinese (425 men of various occupations and 75 women), and finds it to be considerably lower than that of healthy Americans as recorded by West, as thus shown :—

Vital capacity,	American men	Body surface ratio	2·50	Height ratio	25·0
ditto	American women	ditto	2·00	ditto	20·0
ditto	Chinese men	ditto	2·00	ditto	19·0
ditto	Chinese women	ditto	1·50	ditto	14·0

A. A.

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i. Kelly (William P.). **Hydrocele amongst the Lango of Uganda.**—*Brit. Med. Jl.* 1924. Apr. 26. pp. 746–747.

ii. Kellersberger (E. R.). **A Case of Elephantiasis from the Belgian Congo.**—*Jl. Amer. Med. Assoc.* 1924. Apr. 12. Vol. 82. No. 15. pp. 1197–1198. With 3 text figs. [2 refs.]

iii. Heckenroth (F.) & Bédier (E.). **Un cas d'encéphalite épidémique à forme myoclonique chez un Européen à Dakar.**—*Bull. Soc. Path. Exot.* 1924. Mar. 12. Vol. 17. No. 3. pp. 275–279. With 1 chart.

iv. Taliaferro (W. H.) & Huck (J. G.). **The Inheritance of Sickle-Cell Anaemia in Man.**—Reprinted from *Genetics.* 1923. Nov. Vol. 8. pp. 594–598. With 2 figs. [3 refs.]

v. Sumiwo (Shin). [**On Infrequent Pulse among the Prisoners in the Toyotama Jail. A Form of Disease simulating Oedematous Disease.** *Chugwai Iji-Shimpo* (*Central Jl. of Med.*). 1923. Nov. & Dec. Nos. 1146 & 1048. [Summarized in *Japan Med. World.* 1924. Mar. 15. Vol. 4. No. 3. p. 69.]

vi. Banerjee (Dhirendra Nath). **Normal Arneth Blood Picture in the Tropics, with Special Reference to Bengal.**—*Calcutta Med. Jl.* 1924. Feb. Vol. 18. No. 8. pp. 615–617. [1 ref.]

vii. Kleine (F. K.). **Robert Kochs Protozoënuntersuchungen und ihr Einfluss auf die weitere Forschung.** [Robert Koch's Protozoal Investigations and their Influence on Further Discoveries.]—*Deut. Med. Woch.* 1924. Apr. 4. Vol. 50. No. 14. pp. 423–426.

i. Hydroceles are common in this Nile tribe and often become large and cause disability. The author describes an operation in which there is excision of the redundant scrotum and complete deep haemostasis.

ii. A huge scrotal tumour, figured, was removed, weighing 85 lb.

iii. The case, which is fully described, is the third at Dakar in the last two years.

iv. This paper contains evidence showing that "sickle-cell anaemia in man is an inherited condition and behaves as a single Mendelian character which is dominant over the normal condition and which is not sex-linked."

v. The infrequent pulse was followed by oedema and in severe cases by death. The cause was believed to be vitamin deficiency, differing from that of beriberi.

vi. From the result of examination of 100 healthy Bengalis in Calcutta the author concludes that their normal Arneth index is 52·55.

vii. The author, who was for long associated with KOCH both in Berlin and in Africa, finds that his discoveries are not so well known as they should be, and here recounts the story of KOCH's work on protozoal diseases of the tropics.

A. G. B.

ROCKY MOUNTAIN FEVER (CORRESPONDENCE).

HAYASHI (N.) & TAKEUCHI (N.). **An Etiological Study on Rocky Mountain Spotted Fever**.—*Aichi Jl. Experiment. Med.* Nagoya. 1923. Mar. 31. No. 1. pp. 69–74. With 5 plates. [9 refs.]

In reference to the summary of this paper [*ante*, p. 664] a letter has been received from Prof. S. B. WOLBACH strongly criticizing the conclusions reached by the authors, which he regards as untrustworthy, and stating that the material studied was supplied by himself. He informs us that he is sending a note on the subject to the *Aichi Journal of Experimental Medicine*.

REVIEWS AND NOTICES.

COTONI (L.). TRUCHE (C.) & RAPHAEL (A.). English Edition by PAGE (D. S.) & MORTON (Eva). **The Pneumococcus and Pneumococcal Affections.**—pp. viii+218. With 6 figs. & 40 charts. 1924. London: John Bale, Sons & Danielsson, Ltd., Oxford House, 83–91, Great Titchfield Street, Oxford Street, W.1. [Price 16*s.* net.]

We are not so informed, but it seems probable that this book, in its English dress, owes its existence to the fact that in English-speaking countries, especially America, the pneumococcus has been the subject of very special detailed study in recent years, and a revival of interest has occurred in the possibilities of a rational serum-therapy. The French authors take the opportunity of collating in this volume the bacteriological studies on the pneumococcus which they and others have carried out during the past twelve years in the laboratory of Dr. M. NICOLLE at the Pasteur Institute and under his direction. The main object of their work was to establish the serum treatment of pneumonia on a sound basis, and to this end the authors have investigated with considerable care and patience those cultural and other properties of the pneumococcus such as virulence, serological affinity, etc., which have also enlisted the energies of many workers in this country and in America.

To such workers the amply recorded data of the French authors on cultural methods, maintenance of virulence, bile-solubility and the properties of immune serum will make a special appeal, even though they may be already conversant with the gist of the French work as published. It is doubtful, however, whether the book will make the same appeal to the general medical reader who, though sincerely interested in serotherapeutic developments, must only be wearied by prolix recording of experimental data the significance of which he has not learned to appreciate.

Certain features of the book deserve special mention. The phenomenon of the crisis in pneumonia receives very full treatment, and the conclusion is reached that it is the expression of a hypersensitiveness on the part of the body to a sudden flooding with pneumococcal toxin liberated from the organisms by lytic antibodies. Some experiments on guineapigs are adduced to support this view, but they simply whet one's appetite for further data of the kind with fuller controls.

Very detailed accounts are given of therapeutic tests with pneumococcal serum which a number of French doctors have made in recent years with gratifying success. Apparently in France matters have not yet reached the stage when, as in America, difficulties arising partly from lack of protective power exhibited by pneumococcal serum prepared from certain serological types, and partly from the massive doses of serum required for efficient treatment, have begun to militate against its general use. The French authors use a multivalent serum, and the doses appear to have been of the order of 80 to 100 cc. on the first day, followed by daily doses of 20 to 40 cc. if no improvement has resulted from the primary dose. It is in lobar pneumonia that the serum displays its most impressive effect.

The English translation has been admirably carried out and—an unusual feature in French books—a most useful bibliography closes the volume. The price of the book is unfortunate if a large sale is desired. It contains many simple temperature charts and only half-a-dozen indifferent photomicrographic reproductions of the pneumococcus, which might have been dispensed with at this time of day.

J. C. G. Ledingham.